THE

SOUTHERN AGRICULTURIST.

MARCH, 1832.

PART I.

ORIGINAL CORRESPONDENCE.

ART. XXIII.—*On the Culture of Buckwheat in the Southern States, with directions for preparing it for the table; by* AN EXOTIC.

Mr. Editor,—Buckwheat-flour is used in Carolina by most families who can afford to purchase it; it is often found unsound, and, what is not less objectionable, filled with grit and sand; from these circumstances I have been induced to try the experiment of raising and preparing it on the plantation for family use. Some of your readers may wish to know the result of this experiment, to whom I tender the following information. The seed was procured from Philadelphia, at about 81¼ cents per bushel. As advised by some writers, a poor piece of high ground was selected, and planted about the 15th of August—I continued planting, as occasion offered, until the 31st. The first planting was harrowed in, broadcast, after a crop of Irish potatoes had been taken from the land; it came up regularly in four or five days. A heavy gale of wind, with beating rain, at the time of its blossoming, injured it materially. Most of the subsequent plantings were in drills, and wherever the land was strong and flat the crop was abundant. The last planting, the 31st of August, was harvested perfectly ripe on the 5th of November, although backened

by a succession of cold nights and light frosts, which commenced as early as the 10th of October. It is impossible to say how much per acre was made, as the patches were small, numerous and detached, the seed carelessly covered, and the poverty of soil would, in its present state, make indifferent returns of any grain. The following has been the result of this experiment. Buckwheat can be planted and raised in Carolina upon good, or manured flat land, as soon in the spring as there is no danger to be apprehended from frosts, it is so tender at its *first appearance* that the slightest frost will infallibly destroy it: it will come from any subsequent planting till the last of August. It is liable to the same injury that other crops are from excessive drought or moisture, but more from the latter than the former. I have raised the greatest abundance for the use of a large family, and seed for another year. The August sowing will occur during that *interregnum* which takes place between what crops of other provisions have already been put in the ground, and the fall crops of wheat rye, &c. which generally succeed in September, October, and November. When planted in August, buckwheat requires no hoeing, nor other attention, until the time of reaping, and will grow with more indifferent culture than perhaps any other crop. An earlier sowing will need one dressing with the hoe, as with oats. Drill-sowing, which is about eight or ten inches apart is preferable to broadcast, more particularly when cultivation and economy in manuring are requisite. The proportion of seed necessary must vary according to the nature of the land—in general, a bushel to the acre is fully sufficient. It is of rapid growth, and branches out in proportion in good land, and will smother and outstrip almost every species of weeds—it comes to maturity in the early part of the season from seven to eight weeks, and should be harvested by the cradle, scythe, or sickle, as soon as the seed appears generally of a dark brown colour: the two former instruments are the most preferable. The cutting of it should commence before sunrise of a clear day, and not continued after the dew is dried off; the work may be resumed late in the afternoon, but in case of damp weather it may be continued all day; these precautions will prevent great waste in shelling.—After cutting, it is usual to let it lie several days in the swath to dry; I prefer putting it at once in small bundles,

erect, in the field to dry; when sufficiently so, cart it either to the barn, or the centre of the field, and thresh it out immediately. Winnow it, as is usual with other grains, and place it in a close bin, secure from rats and mice.

To prepare it for use, the following plan has been adopted. Take a peck of the seed, (this will be enough for a small family at a time, as when made into flour it soon loses its fresh and sweet taste by keeping, and this is one objection against that imported) have it well scoured in two or three tubs of clean water, as with rice for cooking, spread it on sheets, or a clean floor, in the sun, frequently turning it to dry; this, a winter's sun will do in a few hours; then rub it a little on a common wire sieve, to separate the remaining *sand* and false shell from the grain, after which rough grind it in a common stone corn-mill, then, by sifting or raying, separate the husk as is done with grist, set the mill finer and grind the grain a second time, it will then be fit for use. If the seed is very good, each bushel will produce two of flour.

Buckwheat-cakes are made with two-thirds of the flour, one-third of white-flint corn-flour, mixed with water, a little yeast and salt—this will rise in two hours if placed near a fire—then being baked upon a *hot* iron, previously greased, form very pleasant cakes. It is preferable to use the muffin-tin forms in baking, making the cake about a quarter of an inch thick, they should be saturated with warm butter when taken from the iron.

Buckwheat is considered highly important in the raising of bees; the straw is not much esteemed, except when thrown in the pens for offal fodder, and manure. For culinary purposes it is used in various forms, and as a meal is not apt to turn sour on the stomach; after being shelled, when boiled (the water considerably evaporated) it is said to be excellent, eaten with milk or butter.

The batter of buckwheat-cakes frequently sours from being made over night; to neutralize the acid, add, about ten minutes before baking, a little powdered magnesia.

It is also good food for horses, although not proper on a journey or hard labour: it is said to increase, with cows, the quantity of milk—one bushel of it is equal to two bushels of oats—is peculiarly excellent for fattening hogs, poultry and pigeons—it will grow on any land not liable

to springs, and will come in any season not checked by frosts—requires little or no attention—is very productive in strong lands, and yet I know of no one on the seaboard of this State who plants it.

Very respectfully, your's,

AN EXOTIC.

ART. XXIV.—*On the Culture of Cotton; by* N. ROACH.

Dear Sir,—The operations of planting and of cultivating the soil are every where so simple and uniform, that I cannot hope to throw much additional light upon the subject. My principal object for the present is to make a few remarks on the cultivation of cotton upon *high and dry soils* with the *rake* and *skimmer*, (without observing the usual mode of throwing up beds) and of calling the attention of planters particularly to the above-named ploughs. Flush planting is considered to possess the following advantages: 1st. The labour of listing and of bedding saved; 2dly. Attraction and retention of moisture; and 3dly. Facility of culture. Let me illustrate these by a few facts. Having by the first week in March, thrashed down and broken to pieces all of the old cotton stalks and limbs, we proceed with the double-dagon (No. 3, two-horse) plough to turn them under, breaking up the ground at the same time at least four or five inches deep, in which state it remains until the first week in April, when immediately before planting, the rakes are run all over the surface (wide lands) as well to destroy all the young grass visible and invisible, as to pulverize and open the soil which might become too close from rain, &c. Your field is then laid off with a small shovel, in rows three feet and a half wide, and in these rows or furrows, you drop eighteen or twenty seeds in *bunches*, ten or twelve inches apart; your negroes in a very short time will drop their seed as regularly as if you had made a hole or chop to govern them; and the fol-

lowers coming after those who drop, cover either with their feet or the hoe. Your cotton now is planted upon a perfectly level surface, and the lightest shower will have effect in bringing it up, whereas, upon beds, a hard and brief shower seldom or never reaches the seed, but is diverted to the alleys and runs as it would from off the roof of a house. As soon as your cotton is up, the rakes go into it again close to the cotton, (twice in every row) to stir the soil and keep down the grass: the hoes follow immediately and are held in advance, the negroes shoving a little earth to the plants with the point and back of the hoe, which is done almost as fast as they can walk; each hand doing about one and three-fourths to two acres per day; it will now be discovered that the rakes have brought out above the surface a good many of the old stalks and limbs, and these will seem to be rather in the way, and threaten to bruise the young plants, but no injury need be apprehended from this circumstance; before your cotton is thinned you have a great many plants to spare, and when the plants become a little older, they are known to be uncommonly hardy. This first ploughing and working will keep the crop in fine order for ten or twelve days, when you go into it with the skimmer, running so close that you cover up many of the plants of unthinned chops with the *ear** of the skimmer, which is intended to throw a little fresh earth in among the plants, to prevent them in some degree from dying out. You go also twice in a row with the skimmer, and will now perceive a little ridge, or the first formation of a bed, for in using the skimmer the remaining three or four ploughings, which are all done in the same manner, and at nearly the same intervals, a very good sized bed will have been formed. The hands go in now, thin out to two plants, (one only being intended to be left) and each will thin and draw up, upon an average, one acre per day. In drawing up, we do not aim at making a bed; the whole of the *alleys* are as loose and as soft as any beds; we merely draw briskly, from right to left, some of the earth from *them* to the plants, and upon the ridge, which now might be called the top of the beds. The hoes always follow the skimmer immediately after they are through, for this purpose, and for chopping out or covering any sprig of grass

* One blade of the skimmer is turned up a little at the end, and acts as a small mould-board.

or weed that the plough might have left. And here I would remark that every planter is fortunate who has a *shift* of land to bring under culture in this, or any other manner; the advantages of turning under a fine coat of weeds in any kind of soil, is too obvious to be dwelt upon, and the best mode of alternating such fields, perhaps would be, once in three years. I have never known lands that would bring a good crop of weeds to fail in producing a decent crop of any thing. Sandy soils that are liable to wash, are particularly benefitted under a system like the present, nor have I ever found any thing but a good result from deep ploughing in the first instance, and a *shallow* cultivation afterwards. Another advantage that the rake possesses, is strikingly shewn, where you cultivate very stiff and clayey soils; for these, after a hard or repeated rains, and a hot sun, become almost unmanageable, and the roots and stems of every plant seem to be locked up as it were in iron. In such lands it is our practice about the second day after a very hard rain to stop our ploughs every where else, and run the rakes through them, and more particularly when the crop is young; this puts every thing in nice order again, and can be done in an incredibly short time. As it cannot be expected that every field is uniformly high and level, or that there should not be some low sinks or spots about them, we, in such cases, throw up a couple of furrows on each side with a shovel or single-dagon (No. 2,) upon the laying-off line, and stop, or turn about, as soon as we arrive at the ascending ground; and in coming to such places afterwards, (in giving the first raking) keep further off from the cotton.

We never task our hands, each taking a row, and keeping up with one or two foremen of the fast and slow hands; in this manner more work is obtained, every one does in proportion to his ability, and all are insensible of the quantity they actually do beyond the usual task. In picking out cotton, sixty or seventy weight is generally considered a task in full blown fields, and this quantity is brought home (sometimes a mile or two) upon the heads of the negroes; but by the following simple regulation, double the quantity will be easily picked, and the whip seldom or never used. We divide our hands into two gangs, and run one against the other each week, for an ample barbacue of beef, pork, bacon, &c. and sometimes for additional garments; and it

is both gratifying and amusing to see with what spirit and alacrity they press forward for the prize: every evening, one or two wagons is sent in to haul home the cotton, and in the months of October and November, we have frequently averaged one hundred and thirty-five pounds Alvarado or Mexican cotton to the hand—some hands picking as much as one hundred and ninety-five pounds.

In moist swamp-lands, we return the old stalks, broken up, to the alleys, and throw up beds upon them with the No. 2 dagon, caring very little about bedding with the hoe; the skimmers here do better work than other ploughs, running them twice, and sometimes thrice, in a row. We differ, however, very little with most planters in cultivating cotton upon beds, unless it is, that we prefer close beds, say from three to four feet apart, and one stalk left in each chop.

I could have wished to have said more than may be communicated upon a limited sheet; or rather, I should desire, that gentlemen had an opportunity of viewing with their own eyes the practical utility of these ploughs, which would speak more in their favour than volumes on the subject.

Respectfully, dear Sir, your ob't. serv't.

N. ROACH.

ART. XXV.—*On the Culture of Sweet Potatoes, in reply to 'Q in a Corner'; by* A PLAIN FARMER.

"Prince William's Parish, Jan. 16, 1832.

Dear Sir,—In the first place, I will say to Mr. '*Q in a Corner*' that I just a few days ago got my October number of the 'Southern Agriculturist,' containing his inquiries, or I should have tried before this to have answered his questions as it respects the cultivation of that excellent crop, the root potato and slips. In the first place, I can inform Mr.

'*Q in a Corner*,' that it is allowed by all the planters in my neighbourhood to be a very difficult crop to make, but I think with attention it may be found to be no difficulty, provided we have seasons. In the first instance you must have a good high piece of ground, where water cannot lay; I myself have always had better success with the slips than the roots. The ground for root potatoes ought to be listed as soon in January as possible, and then well cow-penned; say thirty head of cattle on a task* for one week; or if compost manure is to be used, put a bushel and a half on a task row. I mean the manure to be put on a day or two before you plant: then, the first week in April, take and make a bed somewhat similar to a ground-nut bed, only a little larger. Now, I cannot say whether you should cut your seed or plant them whole, as they have always done as well with me cut, as whole. I have never found much difference, except that the whole seed may give you vines a little sooner; but from the cut seed I have always got a plenty of vines by the time I am ready to plant, which is the 1st of July. I think three inches is sufficiently deep to open your bed to put your seed in.

Now I will say something about the slip-crop, the last year. The first thing I did after getting my cattle out of the swamp was to commence manuring my slip ground, and after that I made a standing pen to make manure. I took then and cow-penned my root potato-patch before I turned them into the swamp, which was the 1st of December.

Mr. Editor, as I am a plain farmer you must excuse my not putting my real name to this communication. If this piece can be of any use to you or any of yoursubscribers, you are at liberty to make use of it. As I am a friend to agriculture, I shall always feel it my duty to send you all the results of my experiments of manuring in any way whatever. I am sorry that I cannot answer Mr. '*Q in a Corner*' respecting feeding stock on potatoes.

I remain your's with esteem and respect, wishing you every success in your work, which I think very highly of.

A PLAIN FARMER.

* By a task is meant in the lower country, one-fourth of an acre.—*Ed. So. Agri.*

Art. XXVI.—*On Collecting Manures, in reply to Q in a Corner; by* Dr. H. Ravenel.

"Poshee, Nov. 29, 1831.

My Dear Sir,—I found in one of the late numbers of the 'Agriculturist,' some queries respecting my manuring system. What distance I carted the raw material?—how many loads carted in per day?—of what relative value the negroes engaged in making manures? &c. &c. I would have written you before on the subject, and given a detail of my management, but the book was borrowed soon after its arrival and has not yet been returned. I presume your correspondent is not very anxious about it; perhaps he only wanted to lengthen his communication: however, to you I will note down a few remarks which, by-the-by, will probably be of no consequence either to you or him. The nearest portion of my pine-land is about half a mile, the most remote about one and a half miles; the average distance may therefore be computed at one mile. During the short days of winter I cart from the nearest point, and in the long days of summer I cart the great part from one to one and half mile, by which means I bring in the same number of loads—ten per day; this last season, however, from May to October, I got twelve loads carted in per day. My cart, drawn by a single mule, is eight feet long, three feet high and three feet wide: the body is composed of very light materials—cypress boards half an inch thick, five or six inches wide, nailed on three inches apart. I have always preferred carting up on the day the leaves are raked; if they are allowed to remain some time they become wet and heavy, and not so much of the straw can be brought in: another reason is, that the two negroes, (the one who rakes and the other who carts) are jointly responsible for the performance of the task, and if other negroes are sent out to rake, on whom there is to be no responsibily for the number of loads brought in each day, they will in all probability rake it in places almost inaccessible to a cart, or at any rate where it is difficult for a cart to get at it. A few years ago I turned out all hands one week in August, and raked up a considerable parcel, much of which I could never cart up from the difficulty of getting a cart to the heaps.

I have two pens, one for the winter, the other for the summer stock. I commence carting into the summer-pen about the 1st of April, and continue supplying that pen till the first November, all of which goes on my cotton-lands. The winter-pen, which is supplied from November to April is put on corn and potato lands, with the assistance of the stable-manure.

Of the labour of the two negroes employed in raking and carting in the raw material, I can hardly make a correct estimate. At the place where I live I plant fifty acres of corn, and have averaged for the last five years twenty bushels per acre; previous to manuring, it was planted every alternate year and yielded about twelve bushels, there is a gain of eight bushels per acre on fifty acres, amounting to four hundred bushels, which would require an additional planting of near thirty-three acres. I have never made any comparative calculation of the increased production of cotton from the manuring system; but believe that one in the same ratio for that of the corn would be a just one. The comparison of my present crop with that of years previous to manuring may not be a correct one. I have eighty-seven acres of cotton now at this place, and eighty-three at the other place, all manured at the rate of twelve large ox-cart loads to the acre, both fields planted for seven years in succession; previous to manuring they rarely ever yielded more than seventy-five weight to the acre; this year I believe I shall make one hundred and fifty weight, probably more. That part of my cotton crop not manured, about one hundred and twenty acres, which is planted on lands originally much better than that which is manured, will not exceed one hundred weight. The unmanured portion of my fields is never planted more than two years in succession, and a part of it only every other year.

I have thrown together a few ideas, which I am not vain enough to believe can be of any importance to yourself or any body else.

I remain with sincere regard,

H. RAVENEL.

P. S.—It is thought by many planters that cotton blossoms, as late as the 10th of September will make white

cotton, should there be no killing frost till the first week in November. On the 10th of last September I marked twenty-seven yellow blossoms; before the 1st of October nine of the pods left by those blooms had dropped. We had no frost this year to destroy vegetation entirely until the 23d of November, and yet not a single pod of them had opened, and many of them, from appearances, would not have opened for ten or twelve days after the 23d. I believe it is erroneous to calculate on good white cotton from blooms after the first day of September. H. R.

ART. XXVII.—*Horticultural Notices; by the* EDITOR.

Under the above title we intend, from time to time, to give an account of such new vegetables as we cultivate, as well as such facts as come under our observation relative to those which are in common cultivation among us. We shall be happy to receive similar contributions from our correspondents.

Winter Melon.—Much attention having been excited, respecting this fruit, by the notice we published of the one exhibited by us, at one of the meetings of the 'Horticultural Society,' last summer, a more particular account of it will, perhaps, be acceptable to our readers, as we believe none has been published in the United States, and even those contained in European works are generally very concise.

This fruit must not be confounded with what has long been known in this State as the winter melon:—the latter being a variety of the *cucurbita citrullus*, or water melon. whilst the former is of the *cucumis melo*, or musk melon,* from which it differs very little in either appearance or flavour.

* All of the *cucumis melo* are known among us as musk-melons and under this general name, we include Cantaleupes, Romanas, Persian melons, &c., this is erroneous, but being in common use we continue it.

In the 'Encyclopædia of Gardening' we find the following description of the winter melon, taken from the 'Horticultural Transanctions': "The winter melon [is] cultivated in various countries bordering on the Mediterranean sea, and particularly in the orange gardens at Hieres in Toulon, whence its fruit is sent to Paris. Skin thin; flesh white, fine, saccharine and juicy; not rich, but pleasant; the shape, oval; size, about nine long and eight inches broad; colour, a dark green. This fruit is regularly imported [into England,] and may be had in the fruit-shops from September to January." This description agrees exactly with the one grown by us, except as to colour and size, ours being smaller and of a beautful light yellow.

In the summer of 1830, we received a few seeds from a friend, who had taken them from a melon which he had eaten in February whilst sailing on the Mediterranean. We immediately planted a few (in July) but they fared the fate of all melons planted at that season. In April last we planted the few remaining seeds, from which we obtained but two plants. The season was extremely unfavourable to all of the melon tribe; the heavy falls of rain destroying not only the fruit, but also the very plants entirely. The vines of the winter melon were loaded with blossoms and fruit when these rains occurred, (in June and July,) and were extremely luxuriant at the time, but soon commenced dropping, and finally I obtained but a single ripe melon, which was picked on the first of August.

This melon when plucked was of a beautiful light-yellow, or straw colour, smooth skin, eight inches long, and four and a half diameter, very firm, not yielding at all to the pressure, and possessing no perfume. It was placed in an open room, and no further care was taken, than to see that it was not injured. About the middle of September, it was found to yield to the pressure of the finger on the underside, which softness gradually spread until the whole became mellow, which was not until the middle of November. It was then soft to the touch in every part, not like decayed fruit, but rather like a ripe, mellow peach. At first it had no odour, but about the 1st of November a little could be perceived, which increased as the melon became soft, or mellow, and at last was so strong as to perfume a large room to such a degree as to be immediately perceptible on entering it.

This fruit, we are informed, is kept in Italy until late in the spring, and it is not unusual to see them during the winter hung around on the outside of cottages. This being the case, we determined to see whether it were possible to keep ours until the new year, but, unfortunately, we could not. A slight decay was visible at the stem-end early in December, which progressed however but slowly, and we deemed it advisable to cut it on the 24th. We had delayed it too long—the fine perfume had vanished, and although only the outside was at all affected, yet we could perceive but little flavour in the flesh, so little as not to enable us to judge of its merits. It was, however, remarkably firm and juicy although decay had commenced. Another circumstance which we regretted fully as much if not more, was the germinating of fully one-half of the seeds, some of which had shoots at least two inches long when the melon was cut. Although we had not a fair opportunity of judging of the merits of this variety, yet we cannot but think it will be found to be an acquisition, even should we be able to keep it not longer than three or four months, which we think will easily be accomplished, for it will not rot from slight injury received when first picked, as was proven in this instance—some persons having in several places inserted their nails, and in one gouged out a piece, yet it did not decay at these places, as would have been the case with other varieties, but a gummy substance issued from the wounds and in a short time the surface became hard, with a kind of scar over the wounds.

ART. XXVIII.—*Observations and Experiments relative to the proper time of planting the Irish Potato; by* Q IN A CORNER.

"Charleston, Jan. 12, 1832.

Dear Sir,—I have been rather surpris d that a root which is so generally cultivated as the Irish potato has not

been treated of oftener and more in full by our planters. You have, it is true, given us many articles extracted from other publications relative to it, and the information gained from these have been, beyond a doubt, of some service to the planters. But the culture of the same plants in different climates cannot be the same; the general outline may be, but there is always a change necessary to adapt them to their new locations. Their habits remain in a great measure unchanged, and the cultivator has so to arrange his plans that as little violence as possible may be done to them. To make my meaning more clear, we will take, for instance, the ruta baga turnip. This vegetable is sown in England and the Northern States as early as May, and taken up and housed, or placed in heaps, to preserve them through the winter. With us, such treatment would be absurd, for it receives its greatest growth in the South after cool weather has set in, and perhaps increases more in proportion during November, December and January, than the three preceding months. It stands not only the severity of our winters, but improves both in size and flavour. Should a young and inexperienced planter therefore wish to cultivate this root, and being unacqrainted with the course pursued in this climate, adopt such as is recommended in European and Northern agricultural works, (and where could he find any other until the publication of your journal?) he would not only be disappointed in his expectations, but in all probability abandon it as unfit for our climate; whereas, when properly cultivated, there is nothing which answers better for a winter crop.

What is here said of the ruta baga, may be said of every crop we grow, and hence the value of the 'Southern Agriculturist' to the southern planter. Our climate differs so much from those of Europe and the rest of the United States, that we require a code of culture for ourselves. From works published in those countries we may take the outline, but we must fill it up ourselves. Of the crops in common cultivation among us, we have ascertained these points, but as improvement is progressive we have much yet to learn, and our planters I think ought (perhaps I would not use too strong an expression were I to say, are in a measure, duty bound) to communicate such facts (however trifling to them they may appear) as

come under their observation, relative to the culture of any of their crops, or connected with domestic economy. But I have digressed somewhat from my subject.

The Irish potato, although not cultivated as a crop for market, or even in large quantities for home consumption, is grown by almost every one who owns a plantation, or cultivates a garden. By some for plantation use generally; by others for the use of their families solely. It is found to yield well with us, when planted at a proper season, is highly manured and well attended. But they are not much liked by negroes generally as an article of diet, and when to this is added, that it is almost impossible to keep *even a few* during summer, we have the true cause assigned for the little attention paid them. Still, however, they form an agreeable variety, and if the good, mealy kinds are alone cultivated, few persons will be found who will not partake of them. Moreover, coming in at an early season, they may be made to assist the corn crib materially.

The Irish potato is planted on the seaboard in the months of January and February—some preferring the former and others the latter month. The reason assigned in favour of February is, that after they have come up, there is not much danger of their being injured by frost, and many persons dread having their tops killed, as if it were certain destruction to the whole crop. The market gardeners always prefer January, and I have observed that those planted the earliest produced the best and largest crop—the season of their growth being more in accordance with their former habits; whilst those which are planted in February have the hottest and driest of our spring months to form their tubers in.

It is an error to suppose that the crop is materially injured by having their tops killed. The injury sustained does not reach further than the first joint,* and they will recover and bear fully as well, if not better, than those planted so late as to come up after all danger of frost is over, say in the month of March. I would even prefer planting in November or December if all things suited.

* This our experience confirms. We have had the vines of most luxuriant plants killed by frost, but have never found the stalks injured below the first joint, *unless tubers of some size had been formed*, in which case if the weather be severe, they are destroyed entirely.—*Ed. So. Agricul.*

I was informed by an old and respectable planter, that the greatest crop he ever made was from some planted in the month of November, and one experiment I made immediately after goes to convince me that planting them early in the winter is rather an advantage than otherwise. I will give you this experiment in full, extracted from my note-book, and would at the same time suggest to my brethren of the plough, the propriety of furnishing you with extracts from their agricultural note-books, which strikes me might be of much service to all of us, if each would follow it up, and I have here communicated it with a hope that some others will be induced to follow my example.

"Observing last year (1826) that the earliest planted potatoes produced best, I determined to make a trial of them very early, and accordingly on the 25th of November I had the ground prepared and planted. Some of the rows were four feet, but generally not more than three feet and a half apart. These were manured with a compost of stable-manure and the top-soil and leaves brought from the woods—swamp-mud and stable-manure, and stable-manure alone. They commenced throwing out shoots and roots about the 20th of December, the former appeared above ground January 9th, and grew as vigorously as I ever knew them to do until the 18th, when they were all cut down by a severe frost. So intense was the cold at the time that even garden peas (which, except when in bloom, are very hardy) were destroyed entirely. No effort had been made to protect the potatoes further than giving them a good bed in the first instance, it being my intention to ascertain whether they could be carried through when planted thus early. On examination I found that the vines had been injured by the frost only about three inches below the surface of the beds, and in no instance did I discover any killed entirely. Only to the first joints were injured, and from this place they shot out roots and sent up from one to three shoots from the old and injured ones, besides others which sprung from the original sets. On the 6th of February they were again above the beds and as luxuriant as ever, and no one would have supposed any injury had been sustained by them from frost. At this stage of their growth, my gardener (a Scotchman) introduced the plough and had the whole of the beds ploughed from them, leaving only as much as would support the plants in their places, being

not more than six inches. The earth was immediately returned to them, and the beds moulded with the hoe. This treatment was, I think, of service, for they produced more (judging by the eye) than those which were not so treated. It ought however to have been performed earlier, for the large, white roots, at the extremities of which the tubers are formed, were found in abundance, and of course much exposed, though I believe they received no further harm, as I did not find any broken or otherwise injured.

March 4th, they were eight inches above the beds and had fourteen leaves. On some of the plants I found small tubers about half an inch diameter. The weather was extremely dry, having had but three days and half of rain in January, and as much as would amount to three days in February. During the month of March we had but two slight showers, which being followed by high, cold winds, were of no service, as the ground was in an hour after as dry as ever: on examination I could find no moisture whatever in the beds. The potatoes consequently suffered much, and although not so apparent in the vines, yet the tubers did not appear to increase in size.

March 26th, we had a severe black-frost, and the tops were again killed, many entirely, whilst a few only perished to the first joint. Supposing that the injury was not greater than at first, I did not dig them, but it soon became evident that too many had been killed to render it profitable to permit them to occupy the ground longer, and accordingly on the 11th of April I had them taken up. I found that those which had tubers of any size were killed to the root, whilst those which had not progressed so far were only killed to the first joint, as at first. Another fact I noticed, which was that a large portion of the young tubers had shoots, some of which were at least two inches long.

Those who have attempted to raise potatoes from the young tubers of the same year's growth, have experienced how very difficult it is to get them to vegetate, and that it can seldom be accomplished until August and September, and even if left in the field, untouched, the larger ones will rot, whilst the smaller ones do not appear to be accelerated in their growth. How then came it to pass that in this instance, they should have commenced growing almost

as soon as the vines from which they derived their nourishment had been destroyed, I confess myself unable to account for it.*

The crop produced from this experiment was indeed small, it did not reach quite a hundred bushels to the acre, including the small, nor were any of the tubers large. This I attributed to two causes; first an improper selection of seed, the variety which I obtained being a small, but said to be an early one, which induced me to plant it: secondly, to the great drought which prevailed during the whole of that spring. The smallness of the crop might induce some to suppose that it was occasioned by being planted at an improper season; and, I perhaps would have joined with them in this opinion, had I not made the experiment in such a manner as to settle this point. I had the same variety planted on the 1st of January, and again on the 1st of February; they were manured as the others were, and the soils were exactly alike—light and sandy. From neither of these did I get as many eatable tubers as amounted to the quantity used for seed.

Circumstances have prevented me from repeating this experiment; but I would be glad if any of your subscribers have ever tested this point, that they would communicate the result, whether confirming or not the experiment I have detailed.

Before quiting this subject, I will mention, that where the swamp-mud had been applied they were more numerous, though smaller than where stable-manure alone had been used. Where leaves and trash had formed part of the compost, they were very inferior, in fact, these appeared to have undergone no change whatever."

Thus, sir, have I stated the result of a single experiment, with the hope, in the first place, that it may be of some service—and in the second, that your readers will follow my example and give extracts from their note-books, which cannot fail of being interesting as well as instructive to your readers. You will observe that the whole is given in the past tense, for it is extracted not from the notes taken at the moment, but the book in which I record my experiments when finished, to which I have added an occasional remark. I have notes of several other experiments, and

* I would be glad to receive the opinions of some of your correspondents on the subject.

have made many observations, but I think you will agree with me, that I have written enough on one subject, at least for this time, we will therefore let them rest at present.

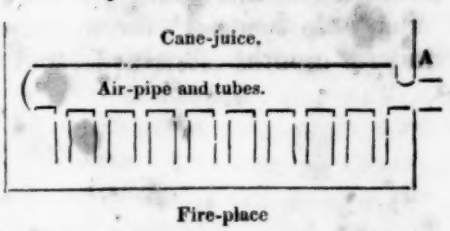
Q IN A CORNER.

ART. XXIX.—*A method to Chrystalize Common Brown Sugar.*

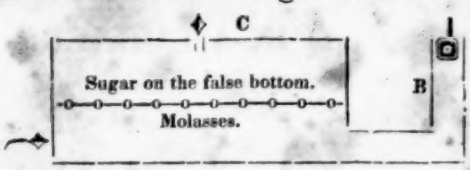
[Communicated for the 'Southern Agriculturist.']

Heat the cane-juice as quickly as possible to one hundred and ninety degrees of the common thermometer: dissolve, for each hundred gallons of juice, two pounds of bruised alum in as much water as is necessary for the purpose; in another vessel make three-fourths of a pound of fresh lime, just slacked and sifted, into a thin cream: add the solution of alum and stir it well into the hot cane-juice: then add the lime and stir it about: draw the fire, and let it subside for half an hour: then draw it off from the sediment, and proceed to evaporate it.

Boil it; and before it begins to boil, throw in a quantity of air continually, by means of any kind of blower, into a machine of this kind made of tin: the common blower used to clean wheat from the chaff by a current of air, will answer very well. The air is thrown in along the pipe at the end of the cylinder A and passes down the straight tubes, which reach within four inches of the bottom of the vessel in which the cane-juice is boiled. This air, ascending through the liquor, very greatly promotes the evaporation, and prevents the sugar from being discoloured by too much heat. There are usually two sets of strait tubes attached to the cylinder, one behind, and not here represented.



When the sugar is grained and ready to be put into the casks for the molasses to drain from it, that process is expedited thus: the sugar is strewed twelve inches thick at the utmost, on a false bottom, pierced with holes, in a box air-tight, having an air-tight cover with a cock in the centre. The pipe B receives the piston of an air-pump, and all the air is pumped out of the box so as to form a vacuum under and over the sugar: the cock in the cover C is then opened and a stream of air from a warm apartment rushes through the sugar and carries the molasses forcibly into the bottom of the box, from whence, when necessary, it is drawn off by a cock in the side. This vacuum and stream of air alternately is frequently produced, till the sugar is quite dry. The air of the room towards the end of the process should be heated to ninety degrees of Fahrenheit's thermometer. Thus, in a few hours, or at most in a day or two, the sugar may be made ready for market. It is impossible here to enter into minute details; but the principles on which this process depends are too obvious to be mistaken. The colour and the grain of the sugar will be found very superior by this process. It is in use in the refineries of England, and the machine above described has superseded Howard's patent vacuum over the cane-juice.



The above process in all respects has never been before published in this country; but the patents copied into the 'Franklin Journal' for six months before January, 1831, and six months afterwards, had better be consulted.

ART. XXX.—*The Successful Planter, or Memoirs of my Uncle Ben; by an* EDISTONIAN.

(Continued from page 85.)

My Uncle Ben now saw around him almost every convenience, which nature, or rather his own industry could

afford. His plantation wore the appearance of general neatness. His servants were well clothed and provided for—their houses excellently accommodated—his horses and cattle fat—and every thing going on in that harmonious order, which bespeaks the directing hand of some skillful overseer. In short, 'Industry Hall' had now become the pride and admiration of the whole neighbourhood. If a stranger visited the parish all were anxious to show him the place. It became a kind of parish boast; and every inhabitant felt proud that he had such to show. This we must however acknowledge was sometimes done with a kind of envious eye. But my Uncle always praised, rather than condemned the feeling, saying, "that it bespoke a sort of wish to do what he had done." Other philosophers may have expressed this sentiment with greater beauty; but none, to my knowledge, ever expressed it with more infallible truth. His remark, in a short time, evinced itself in the rival improvements which run through the whole parish. Wherever he could, he lent his aid; and was never known, as others would have been, teasing himself with the jealousy of rivalship. His course was a straight, onward one; and he knew it to be, as well morally as mathematically, the shortest distance to reach any destined point. Others might turn aside to gain an object; but he found his way the best.

My Uncle, now, had every comfort about him save one. This was wanting in an amiable partner. He felt that he had acquired a sufficiency for him to support one, and he accordingly began to look about him as our common parent did amid all the delights of paradise. My Uncle Ben, was ever an earnest advocate for the marriage state; and like the good Vicar of Wakefield, he took every occasion to plead its defence. It was not, however, with him an idle schoolboy dream of felicity. It was not like the summer cloud, whose beauties captivate the spectator, and faint away with the evening sun which gilds its borders; but he viewed it as the holy covenant of religion, which makes us happy or miserable according to the manner in which we accept it. As a philosopher of the world he viewed human nature as a formation full of frailties; and as such, he looked well how he could accommodate them, before making his matrimonial alliance.

I can give no better idea of my Uncle's sentiments upon this subject, than by quoting the following letter, written

about this time to a friend. From it, the reader will form an amiable estimate of his character; and the young of the present day will gain some useful and generous hints as to the proper rule of conduct.

"*My Dear Friend,*—You have been often kind enough to favour 'Industry Hall' with your company; and upon more occasions than one, you have complimented the conveniency and happiness of its management. I think you have sometimes facetiously remarked, that it was only wanting in a mistress to render its master one of the happiest gentlemen in the world. You will smile, no doubt, when I tell you, that I begin to think an amiable wife would greatly contribute to this end. And much more so, I suppose, when I further tell you, that I have had one of the above in view for some time back. As the frailty of human nature, will not permit us to expect any thing perfect in this world, I think I can satisfy myself with her 'mind, body and estate.' Happily for me, Miss —— blends these three requisites nicely together. Her body, though not beautiful, is compensated with excellent, good sense. And I do not know of one womanish affectation that she possesses. Her family is respectable, and not too *long* to make a man a beggar by their dependency. You are doubtless impatient to learn her estate. They are summed up in the view of the picture already given. I think, my friend, you will agree with me in esteeming this a 'happy match.' For, although I may have got more riches by another, I am content with matters as they stand. He is indeed narrow-minded and ignoble, who looks too anxiously at such a recommendation in becoming a husband. It is much to be regretted that this unworthy principle so extensively pervades the world. I verily believe some men spend large fortunes in hunting out rich wives. Now, supposing they attain their end, what do they gain after all? The object of a lasting affection? No!—riches can never afford this. Far be it from me to undervalue the acquirement of riches. They have been my constant aim, inasmuch as they have become the sure representative of most kinds of industry. But I must certainly object to making them our chief consideration in matrimony. How well our poor, young friend —— illustrates the truth of this remark. He has been paying a three-years' court to the rich Miss ——, during which time he has wasted away more real wealth than she is worth. He commenced the

world six times better off than I, and now he is on the very eve of bankruptcy. Suppose he had set out with the determination of making his industry acquire what he has aimed at in Miss ——, think you he would now be her slave? I am certain it would be the reverse. Had he been half as persevering in improving his own property, as he has been in paying his court to her's, he would now have been an independant man. I am constrained to pity the time and money which this young man has thrown away to cath his bird. As poor Richard says, 'he has paid too dear for his whistle.' And I cannot reflect upon his case without smiling at the 'Dog and his Shadow.' But to return to my own case. You recollect that we have sometimes conversed on this subject as a pastime. I can assure you that my reflections have been always tinged with the sweet anticipation of reality. To sum up, then, my 'notions' upon this subject, I would never marry a rich wife because, it would be risking too much of my independence. Nor would I marry a poor one without sense, because I would become a beggar. Above every consideration is that of temper—a man should measure well its extremes of heat and cold, before he opens his doors and gives up his house to its possession. Once he makes the step there is no retreating. He is held irrecoverably fast both by the sacred canons of religion and the laws of all civilized society. It is the chain which binds up all our happiness in this world, and links up too much of the happiness which is in the world to come."

These were the principles upon which my Uncle formed his matrimonial alliance. In his choice, therefore, he took one whom he knew he could accommodate. He did not look for perfection; but selected as many good qualities as nature could give. Wherever he found a defect he was careful to guard against exposing it. And if ever his wife was found to become ruffled on any point, he always avoided bringing it upon the carpet. One thing he particularly inculcated—I would above all recommend it to my readers—it was, "never to interfere with those duties which of right belonged to her; such, for instance, as meddling with keys—regulating the house and servants," &c. "These, (said he) are considered, in matrimonial law, an exclusive domain of the wife, any invasion of which may be forcibly resisted." It was thus my Uncle rendered himself a happy

husband. The company of himself and wife was indeed a felicitous favour. And now that I behold from my window their silent graves, I exclaim with the scripture—"Beautiful in life—in death undivided."

(*To be continued.*)

ART. XXXI.—*Query, relative to a failure of an Experiment in the Culture of Rice; by* A RICE PLANTER.

"Georgetown, February 21, 1832.

Sir,—I wish to inquire, through your paper, of some experienced planter, what could have been the cause of my failure on a particular square of rice the last year. My management of it was as follows, viz: Early in November, (of the preceding year) while the stubble was green, I bedded up the land, covering the stubble well, and flowed it for six weeks; then dried and ditched it thoroughly. It drained well. In April, the land between the beds was dug deeply. A few days after, these sods were broken, the old beds were then moved and their bottoms dug up, and the sods broken—the stubble was well rotted. Lastly, the whole well leveled for trenching. When I commenced trenching, the land was perfectly pulverized for six or eight inches deep. It was planted on the 28th of April. As soon as the rice was large enough it was nicely hoed; ten days after, hoed again;—8th of June, flowed it; 21st, dried and hoed through;—in about ten days hoed again, and flowed it. The produce was not more than thirty bushels per acre, while the average of the balance of the plantation was between forty and fifty bushels per acre.

Was the failure owing to the land being bedded up while the stubble was green? or, to its being dug up so deeply so late in the season? My opinion is that the latter was the cause. I will, however, be glad to have the opinion of some one more experienced in planting than myself.

A RICE PLANTER.

PART II.

SELECTIONS.

Art. XIII.—*On Planting.*

[FROM THE LIBRARY OF USEFUL KNOWLEDGE.]

(Continued from page 96.)

In whatever position the seed is placed, the radicle first bursts the covering, and takes a downward direction into the soil, where it becomes fixed, and protrudes, at right angles from its sides, numerous rootlets, which in their turn emit others; and then, and not then, the cotyledons rise above the surface and expand, showing the plumula or bed of the stem, which now advances in growth and unfolds the proper leaves. After the leaves are fully expanded, the communication of the pith with the buds, formed or forming, at the base of each leaf-stalk in the angle made by that and the stem, may be traced. The loss of either of these organs of the seed at an earlier period would have prevented farther growth; for if the cotyledons had been seriously injured or taken away, the radicle and plumula would have died; if the radicle had been removed, the same effect would have followed; or if the plumula had been taken away, the plant would have made no farther progress. But as soon as the formation of the germ of buds is effected, as now stated, the cotyledons may be removed; the summit of the stem and the lower extremity of the radicle may be taken away, and the plant will reproduce others. It is during the previous stage of growth that the attacks of insects prove so fatal to seedling plants, and require the utmost care of the planter; and hence also, the greater care and attention that is demanded in the preparation of the soil for seeds than for the reception of transplanted trees. This also points out the danger of injury to the vegetating seeds, by disturbing the seed-beds before the plants are perfected. It is in these early stages of growth, that the foundation is laid for the future health, beauty, and vigorous growth of the tree. The fibres of the root, with the minute spongeols before mentioned, now imbibe and send up the food of the plant to the leaves, where being spread out to the influence of solar light, heat, and atmos-

pheric air, it is elaborated and returned through the foot-stalk by the longitudinal vessels of the inner bark to the root, depositing in its course, or in conjunction with the original fluids of the cellular texture, forming the various substances and secretions peculiar to the tree. That the sap ascends by the longitudinal vessels of the alburnum, sap, or soft wood, and descends by those of the inner bark, seems to be proved by the experiments of Mr. Knight and others, who have more intimately investigated this part of the subject. That a lateral movement of the sap goes on at the same time, and in conjunction with the ascending and descending movement, appears equally certain.* Every individual leaf of a tree is furnished with its own particular series of vessels for the course of the sap, and not only prepares and elaborates the sap for the increase of substance of its own branch, but also for that of the parent stem and root. Hence it is that trees regularly furnished with branches from the base upwards have more tapering than trees with branches confined to the upper half of the stem, the increase being equal from the point where the branches begin downwards to the root; or, in other words, whatever length of stem from the root upwards is destitute of branches, that part of it from the period of losing them increases in size equally throughout.† Without a just knowledge of this principle in the economy of vegetable life, the important process of pruning in the culture of forest-trees, cannot safely be performed by the forester: that the sap never ceases wholly to move‡ is evident in the increase of the roots

* The sap in ascending is farthest removed from the action of solar light, heat, and atmospheric air; in descending, it is nearest to these important agents, receiving their impulse through the medium of the green, cellular tissue or parenchyma. The offices of this organ in transpiration and inhalation, may be compared to that of an universal leaf covering every part of the stem and branches of a tree.

† This fact may be demonstrated most conveniently by pruning the lateral branches off quite close to the stem of a young, fast-growing tree, leaving a certain number to form a top, and to keep up the growth of the plant.

‡ The term *circulation*, has been objected to as improper for describing the course of the movement of the sap in plants; because a point from whence the movement begins, and to which it returns, (as, for instance, the heart in animals) has not been discovered in plants; for in these the sap is periodically exhaused in the increase of the substance of the tree, and its place periodically supplied from the soil to the spongeols of the roots. The term 'periodical,' is here understood to apply to the effects observed (by the practical planter) of the spring growth, midsummer growth, and leafless, or winter cessation of growth, annually in the progress of every forest-tree. That the roots of these plants (as long as their vital powers continue to act) continue, *without intermission*, to imbibe fluid or pabulum from the soil, however small in quantity that may be at certain seasons, seems highly probable; as also that a movement or circulation of the fluids of the cellular texture, however languid it may be, exists even in the leafless tree. But there are plants, such as the hyacinth, potato, onion, &c. &c. &c., which

and buds during winter when the plant is leafless; but its ascent is particularly distinguished for greater force and activity at two periods of the year—spring and midsummer. The ascent in spring is the strongest, and continues until midsummer, gradually diminishing in force as the new branches and leaves are perfected. This generally takes place about the beginning of July, when an apparent cessation of ascending motion in the sap immediately succeeds, and continues usually for the space of a fortnight or three weeks, according to the age of the plant and the state of the weather. A second ascent of the sap, and growth of shoots now take place, but with diminished vigour; unless from accident, disease, or unfavourable weather, the spring growth has been checked, and the first flow of sap prevented from being exhausted in the production of branches, leaves and blossoms. It is worthy of remark, that those shoots which form fruit, flower, or seed-buds, have seldom (if ever) any second growth; but remain without increasing in length until the next spring. The midsummer growth is almost always confined to those branches which carry wood-buds only. After the second growth is completed, the effects of the descending sap in the formation of new bark and wood is very apparent in the healing up of wounded parts of the stem and branches, which now proceeds with more activity than during any other period of the year. Branches pruned off after the midsummer flow, seldom are followed by shoots from the edges of the wounds caused by their removal, which always happens, more or less, when pruning is performed on free growing trees after the fall of the leaf, and before the full development of the spring shoots and leaves: it is to be observed, however, that the reproduction of branches from the edges of a wound is greatly assisted by leaving a portion of the branch or shoot, or its parent branch or stem, but impeded when a branch is pruned off close to the stem. What was before stated regarding the offices of the pith and medullary rays in originating the buds of shoots and branches, will be confirmed by these facts.

Food of Plants.—Those substances which the roots of plants take up from the soil, and those which the leaves or green system of the plant inhale or imbibe from atmospheric air, are comprehended under the name of the food of plants. This part of vegetable physiology has long engaged the anxious inquiries of science, as well as of practice. The question is one of much importance, inasmuch as a perfect knowledge of what constitutes the food of plants generally and individually, would, with unerring certainty point out the means of fertilizing soils, defective in any

remain two or three months annually dvring their progress of existence, without a possibility of imbibing anything whatever by their roots, rootlets, or spongeols, inasmuch as during that period of their existence, they are destitute of these organs wherewith to imbibe.

respect for bringing to perfection the species of tree most desired; would indicate at the same time the most proper substances to be used with the greatest advantage, the exact proportions in which they should be mixed, the mode of applying them, and the best process of manual culture or working the soil, for elaborating and preparing them for absorption by the roots. Of late years great progress has been made in the investigation of this part of vegetable physiology; the labours of T. A. Knight and M. Dutrochet are, in particular, highly valuable; but much still is required before even an approximation to the solution of this important question can be attained. The structure of the root shewed us that whatever kind of substances are conveyed, or by it introduced into the plant, such substances must be in a minute state of division, or dissolved in water. The analysis of a soil demonstates the soluble substances it contains. These have been found to be chiefly vegetable extract, combined with smaller proportions of a few of the neutral salts, as sulphates of potash and lime, muriates of lime and soda, or common salt; this last, in every instance of our own individual experience, is always in a larger proportion to the other saline matters, and is never altogether wanting, as is the case sometimes with the sulphates and muriates of lime. The vegetable extract, except as regards its presence in poor clays and silecious sands,* is always in a larger proportion to the saline matters. It contains the elements of which the substance of a tree is composed, viz. carbon, oxygen, hydrogen, and azote. The extract, however, obtained from soils is never perfectly pure, but is always more or less (in all our experience) combined with mucilage, and frequently with soluble animal matters. In alluvial soils distinguished for fertility, the soluble extract is found in the largest proportion; five parts of vegetable extract in four hundred of the soil is considered the maximum for healthy vegetation.

The soils called alluvial have the power, it is evident, of preserving this substance in the decomposing vegetable matters which supply it, and of giving it out to the roots of plants, or rather to the waters of the soil, slowly, but in that seasonable and regular manner which is the most conducive to the healthy exercise of the functions of the roots. It is evident that in some alluvial soils, this extractive vegetable matter must have remained from a remote period uninjured for the purposes of vegetation.† In silecious, sandy, and gravelly soils, the reverse of this

* The soils here alluded to, the results of whose chemical examinations have led to the above conclusions, were of almost every kind or description to be met with in practice, comprising the various degrees of fertility intermediate between the poorest sand and the most tenacious clay.

† Extractive matter, when separated from the saline compounds with which it is usually accompanied in soils and in vegetables manures, and exposed to the air, soon decomposes or putrifies. It also loses its solubility

takes place, for the manures applied to these is speedily decomposed, and the extractive matter given out, comparatively, at once: hence the constant repetition of manures required by these kinds of soil to keep them productive. When clay, mild lime, or chalk, fine silecious and calcareous sand, and impalpable vegetable matters are so intimately combined as to constitute what is termed the best loam, the extractive matter, whether of long duration in the soil or in recently supplied manure, is economized and given out to water, and to the roots of the plants, in a similar degree of effectiveness as in the alluvial soil: on the contrary, when clay is the chief earthy ingredient of a soil, the vegetable matter is either retained in the manure, or given out partially; the lower temperature of the clay, its great adhesive powers, and compact texture, uniting to produce this result.* The food of plants supplied by atmospheric air, whatever proportion it may bear to that supplied by the soil, is, at least, equally essential to the growth of plants, for they can no more exist without that, than they can exist without the soil. The curious structure of the leaves shews us how admirably they are fitted to imbibe air and moisture. The essential constituents of atmospherical air are oxygen and nitrogen or azote; and it holds in solution carbonic acid gas and water; they are elastic and invisible, but can be separated from each other, and their bulk, or volume, and weight can be determined, and their pro-

in water after two or three solutions in and evaporations of the water. It is a constituent of the nutritive matter of the food of the larger domestic animals, but in the process of digestion, it is not retained in the body of the animal for the purposes of life, but is voided with the fæces. The pasture grasses, corn, or annual grasses, green or soiling plants, as clovers, lucerne, sainfoin, vetches, turnips, mangel wurzel, and carrots, all contain extract as an essential constituent, which, with the woody fibre and saline matters of the vegetable, are returned again to the soil.

* The great benefit resulting to clayey soils from the process of paring and burning, is that of improving their texture, and, even in some degree their temperature or latent heat. A certain degree of what may be called a circulation of the water and air of a soil is essential to its power of preparing the food of plants depending on the soil. Where this power is wanting, as in the case of a perfectly stagnant clay or peat, or a sandy soil, with a subsoil impervious to water, vegetable matter, however ample, in these soils will remain inert, and afford no support to trees, or, at least, they will not long exist if planted under such circumstances. So obvious is the effect of this principle of circulation of water and air (if we may be allowed the expression) that some have undertaken to prove that the fertility of soils depended on it alone, and that water and air constitute the sole food of plants; and that even animal and vegetable matters were no farther useful than as contributing to the temperature and texture of the soil, fitting it for the more ready circulation of these, and more readily presenting them to the roots of plants. However erroneous the conclusion may be, the principle of practice inculcated by it is essential to the successful cultivation of trees, for on it depend the processes of paring and burning, draining, trenching, digging, and in a word the judicious adoption of the various means which are employed for pulverizing and comminuting soils.

perties satisfactorily ascertained.* Oxygen has received the name of pure or vital air, because animals cannot respire if the air they breathe be deprived of it, nor can seeds vegetate unless it be present in the soil and air in which they are placed. It enters into the composition of the vegetable and most other acids, and largely into that of sugar and extract. It forms about one-fifth of the air of the atmosphere. Carbonic-acid gas constitutes about a thousandth part of atmospherical air, its basis (carbon) is well known in the state of charcoal, and the fundamental constituent of wood. Nitrogen, or azote, constitutes about four-fifths of the atmospherical air. Its offices have not been so clearly discovered: with much reason, however, it appears to be employed in the formation of several products of vegetation, as gluten and albumen, and in modifying the actions of the other components of the air. It is remarkable that carbonic acid gas

* The elasticity of the constituents of atmospheric air is so powerful, that when, from local causes, one ingredient is generated in undue proportion to the others, the most perfect analysis of the general air in the immediate neighbourhood of the spot where this circumstance happens, cannot detect any difference in the proportions of the proper constituents from that of the air of the most healthy region. The atmosphere of a crowded city and that of an open or moderately sheltered alpine region, afford by analysis the like number and proportion of ingredients or elements; but notwithstanding this, the influence of the air of these two situations on vegetation is very different. There are certain plants which will not grow in the atmosphere of a crowded city, and there are others which thrive in the former, and will not continue long in that of an alpine air. Some of the following plants grow freely in the atmosphere of the crowded parts of the city of London.

Plants that grow freely.—Sycamore,
Elms,
Mulberries,
Ivies,
Virginia Creepers,
Vines,
Oriental Planes, bulbous and tuberous rooted plants, (except snowdrops.)

Plants that exist for only a few years in perfect health.—Laburnum.

That exist in health only a limited time.—Privets,
China Roses,
Alpine plants, scarcely ever produce flowers.

Since the above list was written, the Bedford Conservatory, or new flower and plant market, Covent Garden, London, has been erected by John Duke of Bedford, and this interesting feature to the ornament of the metropolis will afford extensive means to determine what species of hardy as well as of tender plants will thrive in the atmosphere of so large and crowded a city as that of London. Since this part of the market was completed in the month of June last year, the following plants may be mentioned as having thriven best. The orange, *Citrus aurantium;* camellia, *Camellia Japonica;* rhododendrons, *R. ponticum, R. maximum, R. punctatum.* Some kinds of pelargoniums *Geranaceæ;* heaths, particularly *Erica tubiflora, E. cylindrica, E. pursoluta, E. cuppressina, E. odorarosa, Acacia verticillata, A. armata, Epachris grandiflora, E. pungens rosea.*

being so largely produced by numerous artificial and natural processes constantly going on, as in the putrefaction of substances of every kind, in fermentation, combustion, respiration of animals, and, during darkness, by the green system of the whole vegetable kingdom, so small a portion only of it should be found permanent in the air, varying from a five-hundredth to a thousandth part as the minimum and maximum. It is heavier than the other constituents of air, and it is lost from the atmostphere, or from wherever it may exist, in plants only, and forms the bulk or basis of every kind of wood, it must be at present considered as being largely taken up by the roots of plants. Water, the last mentioned constituent of atmospheric air, enters into it in the state of vapour. The quantity of it suspended in the air is supposed to vary from one-sixtieth to one three-hundredth part of the atmosphere, being greater as the weather is dry and hot, at which time it is most useful to the growth and health of plants, being absorbed by the leaves.* It is clear that water constitutes immeasurably the largest portion of what is taken up by the roots and furnished to the plant by the soil; and when it is considered that water is composed of oxyden and hydrogen, it cannot be supposed to act merely as a vehicle of the food of the tree; it contributes, probably, to the increase of the solid parts of the living structure by decomposition into its elements, through the agency of the vital powers.

Such are the general facts disclosed by chemical examinations of the soil and atmospherical air, with respect to the substances supplied by them to plants as food. An analysis of the sap itself immediately after its absorption by the spongeols of the rootlets, and before it enters the ascending vessels of the alburnum,† would probably leave nothing more to be desired on this

* The value of vapour in the air to the health of plants, is well known and appreciated by every skillful cultivator of tropical plants in an artificial atmosphere, as well as by the successful forcing fruit and flower gardener in the hot house. Plants are enabled by vapour in the air to withstand the effects of extreme heat and drought, which otherwise would destroy the organization of the leaves. We ourselves have found the leaves of the Province rose, when in an artificial atmosphere, at an early season (and when its vital powers could not be so strongly exerted as when under the circumstances of its natural season of growth and exposure) to unfold and increase in healthy growth when subjected for a certain time each day for the space of a fortnight to hot air strongly charged with vapour, while leaves of the same species did not unfold, or when unfolded previously to the application, shrivelled up and perished under the application of a dry current of air, of the like temperature, and though all other circumstances were equal.

† The rapid communication which exists between the spongeols of the rootlets and the leaves at the extremity of the tree, as evidenced by the sudden effects produced on the latter by the application of water to the roots of a tree whose leaves have become flaccid or drooping from the want of it, warrants the idea that the ascent of fluids from the roots to the leaves is more direct than our knowledge of the structure of the vessels will

important subject, that might apply to the operations of the practical planter. The sap hitherto examined chemically, has been taken from the alburnum of the tree, and consequently after it had undergone a change in its original constitution, or that which characterized it at the moment of its entering the spongeols of the rootlets immediately from the soil. That the sap undergoes a change in the ascending vessels of the alburnum before it is acted upon by the leaves, has been proved by Knight and others. In these instances, the sap extracted from the lower part of the tree contained much less saccharine matter than that taken from a more elevated part of the stem. According to Vanquelin, water, extract, mucilage, sugar, and acetic acid, combined with potash or lime, are found in sap taken from the alburnum or ascending sap-vessels of the birch, elm, and beech; but these vary in the sap of different species of trees. Saccharine matter is most abundant in the birch and sugar-maple. These results, however, afford but little light in the investigation of the question, as we know that the same sap which produces the acid, astringent crab, produces also the saccharine, aromatic pippin. By the action of heat, light, air, and the peculiar organic structure in different species of trees, under the influence of the vital power, are those substances which are soluble in water, or saccharine and mucilaginous fluids converted into insoluble or resinous and oily substances.

From these facts we may conclude that soluble substances, chiefly vegetable extract, mucilage and carbon, with water as a vehicle and a component, presented to the roots of plants under circumstances varying according to the chemical constitution, and mechanical texture of soils, adapted to the pecular habits or natural wants of different species of trees, as the oak for instance, and the larch, constitute the fruit of trees supplied by the soil to the roots; and that atmospheric air to a certain temperature and degree of moisture, and with freedom of circulation, constitutes that other essential part of the nourishment of trees, which is taken up by the leaves or green system of the plant.

Air, like water, requires a certain freedom from stagnation or confinement to render its nourishing and invigorating properties available to the leaves of trees; when comparatively stagnant, its valuable properties become lost to plants. This is indicated by the disappearance of the green colour from the leaves, which soon drop off, and are not reproduced, but the branches die; a few remaining alive at the top of the stem, may continue the

allow, or that a principle exists in the vegetable structure analogous to that of the irritability of the animal fibre. The well known experiment of Hales to ascertain the force with which the sap of trees ascends, shew that the sap of a vine-branch four or five years old rises with a force considerably superior to that of atmospherical pressure. Plants having the leaves firm and glossy exhibited proportionally less force in the ascending sap.—*Vide* '*Vegetable Statistics*,' vol. iv. p. 114.

existence of the tree for a few years, but without adding to its girth or solidity of contents. These are the invariable effects of stagnant air, the most common and indeed the only cause of which in plantations is the neglect of seasonable *thinning* of the trees, and the removal of dead and decaying vegetable matter as it is produced.

The putrefactive fermentation of spray and brushwood left in close plantations where the circulation of the air is confined, produces fetid gaseous matters, alike hurtful to animal and to vegetable life; the growth of moss on the bark of trees is promoted by it, and whenever this becomes general in a plantation, the progress of the trees is greatly retarded. We cannot better illustrate the importance of attending to this principle of practice in the planter's art, than by stating an instance kindly communicated to us by high authority* on the subject; in many places over an extent of upwards of a thousand acres of the plantations at Blair Adam, the prunings of spray and brushwood, and the loppings of the trees thinned out, for which there is no sale in this country, had been allowed to accumulate for many years. The injurious effect was so remarkable, that the proprietor determined to have the accumulation removed. This was done at an expense not very considerable. Ever since, the accumulation has been prevented by having a squad of women and boys to clear away and brush after the woodcutters or pruners. The expense of this operation has been overpaid by the increase of growth, and it is evident that it has added greatly to the value and beauty of the woods, as well as to the growth of underwood.

To have entered more minutely in the details of the vegetable physiology would have been incompatible with the scope and design of this essay, and to have dwelt less on those principles which bear directly upon every operation of the planter's art, would have rendered the practical details which follow, more obscure and less instructive.

(*To be continued.*)

Art. XIV.—*On the Means of Inducing Fertility in Fruit-trees*

FROM LINDLEY'S 'GUIDE TO THE ORCHARD AND KITCHEN GARDEN.'

Some fruits of excellent quality are bad bearers: this defect is remedied by a variety of different methods, such as—1. *By ring-*

* The Right Hon. Lord Chief-Commissioner Adam.

ing the bark; 2. *By bending branches downwards*; 3. *By training*; and 4. *By the use of different kinds of stocks.** All these practices are intended to produce exactly the same effect by different ways. Physiologists know that whatever tends to cause a rapid diffusion of sap and secretions of any plant, causes also the formation of leaf-buds instead of flower-buds; and that whatever, on the contrary tends to cause an accumulation of sap and secretions, has the effect of producing flower-buds in abundance.† This circumstance, which at first sight seems difficult to account for physiologically, is no doubt to be explained in the difference between leaf-buds and fruit-buds themselves. In a leaf-bud, all the appendages or leaves are in a high state of development, and the central part or axis, around which they are arranged, has the tendency to extend itself in the form of a branch as soon as the necessary stimulus has been communicated to the system, by the light and warmth of spring. In a flower-bud, the appendages or leaves are in that imperfectly formed, contracted state, which we name calyx, corolla, stamens and pistilla; and the central part around which they are arranged, has no tendency to elongate under the influence of the usual stimulus. Hence, a flower-bud, or a flower, is nothing but a contracted branch; as is proved by the occasional elongation of the axis in flowers that expand during unusually hot, damp weather, late in the spring, becoming branches, bearing sepals and petals instead of leaves. It is therefore easily to be understood why, so long as all the motions and secretions of a tree go

* Transplanting, and diminishing the system of roots, have also, by lessening the flow of sap, a tendency to induce fruit-buds. A sizeable tree often shows blossoms the second year after being transplanted, though subsequently it may not bear for some years. J. B.

[*Genesee Farmer.*

In several instances we have had pear-trees removed, which, although grafted and grown to large size, yet had not produced blossoms; the effect very often has been that blossoms were produced the year following: in one instance, a tree blossomed, and did not again for three or four years.—*Ed. So. Agricul.*

† Knight's opinion in regard to the formation of wood and fruit-buds, is this: that the natural efforts of the mother tree are directed—1. To the nourishment and perfection of her progeny, the fruit; 2. To the production of new wood-buds, essential to the elaboration of food the coming year; and (these labours being finished) 3. To the production of fruit-buds for another crop. But as our seasons do not afford time to perfect all these labours, it happens that many varieties, particularly those which produce great crops, and carry their fruit late, produce fruit only every other year; and hence, too, varieties brought from a higher latitude, where the seasons are longer, as the Siberian crab, and the process of vegetable development more rapid, become in warmer climates annual bearers. The varieties that ripen their fruits early, as most of the cherries, plums, &c., produce fruit every year, except that then the crop is heavy, a barren year, and often the death of the tree succeeds. J. B.

[*Idem.*

on rapidly, with vigour, and without interruption, only rudiments of branches (or leaf-buds) should be formed; and why, on the other hand, when the former become languid, and the parts are formed slowly, bodies of a contracted nature, with no disposition to extension (or flower-buds) should appear.

It will be found that the process of the practices above enumerated, to which the gardener has recourse, in order to increase the fertility of his fruit-trees, is to be explained by what has just been said. In *ringing* fruit-trees, a cylinder of bark is cut from the branch, by which means a return of the elaborated juices from the leaves down the bark is cut off, and all that would have been expended below the annular incision is confined to the branch above it. This produces an accumulation of proper juice; and flower-buds or fertility are the result.* But there is a defect in this practice, to which want of success in many cases is no doubt to be attributed. Although the returning fluid is found to accumulate above the annular incision, yet the ascending sap flows along the alburnum into the buds with nearly as much rapidity as ever, so that the accumulation is but imperfectly produced. On this account, the second practice of *bending branches downwards*, is found to be attended with more certain consequences. The effect of turning the branches of a tree from their natural position, to a pendulous or horizontal one, is to impede both the ascent and descent of fluids, in a gradual but certain manner. The tissue of which branches is composed is certainly permeable to fluids in every direction; and there can be no doubt that the vital actions of the vessels of a plant is performed both in the natural and in an inverted position. So long as that erect direction of the branches which is natural to them is exactly maintained, the flow of their fluids, being subject to no interruptions, will take place in the freest possible manner; but the moment this natural direction is deviated from, the vessels become more or less compressed, their action is impeded, and finally, if the inversion is perfect, it becomes so slow that an accumulation of the profuse juices necessarily takes place through every part of the system.†

* I dislike this method. It is robbing one part of the tree of its food to pamper a pet branch. Several branches of the plum, experimented upon, died the following year; and branches of the apple broke off with the weight of fruit. J. B.

[*Idem.*

We do not recollect a single branch which we ever experimented on by *ringing*, or any that we have seen in the gardens of our friends, which did not die the following year. Others may have been more successful, but such has been the result of our experiments.—*Ed. So. Agricul.*

† These axioms in vegetable physiology will find a confirmation in our orchards and gardens. The pendulous and horizontal branches will be found to abound most in blossoms, and others much in the ratio of their

One of the objects of *training* is to produce the same effect. Branches are bent more or less from their natural, erect position, their motion, in consequence of the action of wind upon them, which is known to facilitate the movement of the fluids, is totally destroyed; and hence arises the accumulation of proper juice which is necessary to their fertility. Nor is the *influence of the stock* of an essentially different nature. In proportion as the scion and stock approach each other closely in constitution, the less effect is produced by the latter; and, on the contrary, in proportion to the constitutional difference between the stock and scion, is the effect of the former important. Thus, when pears are grafted or budded on the wild species, apples upon crabs, plums upon plums, and peaches upon peaches or almonds, the scion is, in regard to fertility, exactly in the same state as if it had not been grafted at all. While, on the other hand, a great increase of fertility is the result of grafting pears upon quinces, peaches upon plums, apples upon white-thorn, and the like. In these latter cases, the food absorbed from the earth by the roots of the stock, is communicated slowly and unwillingly to the scion: under no circumstances is the communication between the one and the other as free and perfect as if their natures had been more nearly the same; the sap is impeded in its ascent, and the proper juices are impeded in their descent, whence arises that accumulation of secretion, which is sure to be attended by increased fertility. No other influence than this can be exercised by the scion upon the stock. Those who fancy that the contrary takes place—that the quince, for instance, communicates some portion of its austerity to the pear, can scarcely have considered the question physiologically, or they would have seen that the whole of the food communicated from the alburnum of the quince to that of the pear, is in nearly the same state as when it entered the roots of the former. Whatever elaboration it undergoes must take place in the foliage of the pear; where, far from the influence of the quince, secretions natural to the variety go on with no more interruption than if the quince formed no part of the system of the individual.*

departure from an upright position—those growing erect producing the last. Hence a crooked tree (particularly the apple) bears better than a straight tree; and a flat, spreading top is more beautiful than a tall, pyramidical one. Hence, too, the practice of nurserymen, of removing the centre shoot of the apple, when it has attained a sufficient height to form a head. J. B.

[*Idem.*

* In the cultivation of the pear in the London and Edinburgh Horticultural Gardens, advantage is taken of both of these last methods, for a threefold purpose, of inducing precocity and fruitfulness, and of saving ground. Such of this fruit as takes freely, is worked upon the quince, and trained *en quenoille*, that is, the branches, which are suffered to grow low, are thinned out, and those left bent down so as to assume the form of a distaff.

Art. XV.—*How to Preserve Varieties of Fruit.*

[FROM THE GENESEE FARMER.]

It often happens, that gentlemen who have a taste for choice fruits, are disappointed, after having sent their orders tn a distance for trees, paid their bills, and planted out their young trees with all the care possible, when, after watching them from day to day, and from week to week, they find that some favorite tree will not even show a leaf, and they have the mortification to watch it until it becomes a dry, sapless fagot, fit only for the fire. Now all this is extremely trying to the feelings of the lover of good fruit, not taking into consideration the expense attending it. The kinds ordered from a distance are, of course, such as cannot be obtained in the neighbourhood, and the loss of a variety consequently puts the horticulturist back one year, if it does not wholly discourage him from repeating his order. Now such losses and disappointments are easily prevented. When your tree arrives, let some of your best shoots be taken off and set in the ground for scions, and at a proper season let them be grafted into some thrifty stocks, and you render your effort to obtain the variety a certainty, for we hold there is not a greater chance of failure in setting scions of apples, pears and plums, on good stocks, than there is in transplanting trees within the same garden when they are taken up; but as peaches and nectarines are more difficult to graft, we will describe a method, which we have practised this season, which seems well calculated to insure the object of the introduction of varieties from a distance. My friend L— having procured some choice varieties of peaches from Long-Island this spring, was lamenting the loss of some valuable kinds, which did not give any indications of life. He suggested that we should make an experiment by taking some of the buds from the dying limbs, and putting them into growing trees, by the process of scallop budding. I took one or two buds and fitted them in, and covered them with a

and there fastened. Trained in this way trees are planted four feet apart; and the product of a given area of ground is said to be greater, from dwarfs, in this way, than from standards, at the usual distance of planting.

After all, it would seem to be a law of nature, that the food of the young plant, as well as the young animal, shall go exclusively to enlarge and develope the individual, until it has attained to natural puberty, and that the contrivances of art to counteract this law- in inducing precocity, or unnatural fruitfulness, shortens the period of their existence. This also seems to be the tendency of very high feeding and very rich manuring. Temperance is as essential to the vegetable as the animal. The great art of manuring plants is to conform them to their natural soil, temperature and habits. The practice which I would urge, from the consideration of the preceding facts, is, that men should plant both dwarf and standard trees—the first for themselves and the last for their posterity. J. B.

[*Idem.*

piece of muslin which had been dipped in grafting-wax, and have now the satisfaction of seeing a fine shoot growing from one of them six inches in length. I have within the past week, put in buds from one or two other trees which are likely to fail, not having leaved, which now have the appearance of doing well.

We therefore recommend it to our readers, as well worth the experiment, that when any choice variety is procured from a distance, to graft or bud from it, as it increases the chances of preserving it, according to the number of buds or scions set.

Hitherto, the sending abroad for fruit, has been attended with circumstances calculated to discourage the farmers and gardeners of old Genesee: that is—a very great proportion of trees so obtained has failed, although packed with the greatest care. The very idea of losing has prevented many from sending, who would gladly have done it, were they certain of being able to secure, by that expense, the variety they wished. It has formerly been a practice with nurserymen not to sell scions from their choice varieties; but we believe that custom is now considered too transatlantic to be adhered to by our best horticulturists, and scions of any kind may be obtained from them at fair prices, so that there is nothing now to prevent a rapid distribution of fine fruits; and any one that will, now may procure it. The connexion of our horticultural societies with those of Europe, has brought every kind of valuable fruit known either in Europe or America, within the reach of our farmers; and the direction for cultivating it is almost almost daily forced upon them.

Art. XVI.—*On the Culture of the Grape.*

[FROM THE NEW-ENGLAND FARMER.]

I have given more of my personal attention to the cultivation of the vine, than to any other object connected with husbandry. This is now receiving considerable attention through this and other parts of the Southern States. Much has been written on this subject, but every year's experience goes to show that none of it is applicable to our locality: on the results of experiment we have to depend for the best method of cultivation, and to ascertain what vines are the best varieties for our purpose; they are altogether in favour of our native American grapes. I am

much inclined to believe that nearly every foreign kind will, in a few years, be abandoned, unless cultivated for variety or curiosity. The natives are much the most thrifty, produce the largest quantity of fruit and are least liable to rot; the kinds most easily cultivated, and preferred, are the *Catawba* and *Bland's Madeira.* The *Isabella*, though with us liable to some objections, produces very abundantly in favorable seasons; the *Warrenton* grape succeeds better than any other foreign variety. All these kinds produce a very considerable crop the third season after planting. In a vineyard of that age, last season, *I saw three distinct crops on nearly every vine*, which appeared to be entirely the result of a proper system of pruning, which was as follows: At the winter pruning, the vines were cut quite low, generally twelve or fifteen inches from the ground. After a proper number of shoots had put forth, and the fruit had attained the size of a bird-shot, the vine was cut off beyond the third eye from the fruit; from one of these eyes another shoot was allowed to spring, which soon produced fruit; the branch was then cut as at first; a third put out and also produced fruit. Each of these successive crops was generally as large, or nearly so, as the first, and the fruit matured before frost. I doubt whether as many grapes could be produced only in a moist season, which was the case this year; but at such times it exceeds all calculation. Our Georgia wine appears only to want age to be equal to very good and perhaps the best foreign kinds. It sells by the gallon readily at $2.50 to $3.00. You may anticipate that in a few years many of the hills of the up-country of Georgia will be clad with the vine. There was never a finer country for them, or a richer mine of wealth so long neglected.

I see that nearly all the catalogues of nurseries contain an immense number of *foreign* varieties of the vine. Would it not be much better if it were ascertained what kinds could be best suited to this country, and recommended to such as wish to cultivate them? They are now recommended to the public by high sounding names, and by their productions in *their own country;* while they are totally unsuited to this. Many persons when they commence cultivating the vine, know very little of the subject, and often judge of kinds by these recommendations, and their success not answering their calculations, they become discouraged and abandon the business. This is a fact which I think ought to be impressed on the community, and that the kinds of vine that are ascertained to succeed well ought to be pointed out under such authority as would recommend it to the confidence of every one. Yours, respectfully, S. VOSE.

Macon, Ga. Dec. 10, 1831.

Art. XVII.—*On the Culture of Indian Corn.*

[FROM THE NEW-ENGLAND FARMER.]

I observed a publication in your paper, (vol. ix. No. 33,) dated Plymouth, Con. March 7, 1831, subscribed 'B.' in which the writer states his method of raising corn on green sward, and he plants no other with corn. I understand him that it is not advisable to plant any other ground with corn. I am opposed to this opinion for the following reason. I will endeavour to show the advantages which result from *not* planting green sward with Indian corn. If potatoes are planted on green sward there is little or no danger of worms injuring them; and if well managed, the crop is likely to be as good the second year. The ground of course will be more clear, and better worked over than by tillage for corn. The ground, after the potato-tops are taken away for manure, is free from obstructions for cross-ploughing and mixing, and with common usage well fitted for a crop of corn, without the least hazard of being injured by the grub-worm, which too often disappoints the farmer of his crop. It is certain that corn will grow well after potatoes, though they are very much against the growth of many vegetables. By planting corn after potatoes, the farmer obtains not only a more sure but a much larger crop of corn, and afterwards much better wheat and grass. (*a*)

Mr. B. states that he feeds his ground intended for corn as close as possible. For this he gives no reason; but I think there is great reason against it. I am confident there is great benefit derived from ploughing in vegetable substances, and especially if green. I have known good crops of corn without any manure, except those substances ploughed in. In one instance I doubled my crop, side by side, by ploughing one piece a month later than the other, from the benefit of green vegetable manure.

Mr. B. says he spreads his manure and ploughs his ground into ridges, leaving a path between the ridges unploughed. I observed his manure has been spread, from before ploughing until hoeing, on the surface. Every good farmer knows that it has thus been exposed, by evaporation, the effects of sun, air, &c., to a great loss of virtue. At the first hoeing, Mr. B. ploughs or breaks up his balk, and if tough, he admits it to be hard hoeing. I presume it is; I have tried a small sample in a similar way, and found it very hard tending my corn. Mr. B. states that one of his neighbours tried a level, moist piece of ground in Mr. Phinney's mode, and it being a wet season he nearly lost his crop. Thus it is seen that Mr. B.'s advice is altogether in favour of ridge ploughing, even of green sward, for a crop of Indian corn. I will endeavour to show more plainly the advantages of level ploughing. In the first place it

is presumed that the manure in either cases is equal, and the labour of getting it on and spreading it the same. Now I had rather plough an acre smooth, by ploughing every furrow, than cut new furrows, and leave one-half unploughed: besides, its being much harder for the team, it requires twice the attention in laying the furrows even, and there is the balk to plough between the rows. The advantage in harrowing, pulverizing, levelling and lightening the cracks of the level-ploughed above the ridge-ploughed, I consider very great. I had rather tend four acres of the level than one of the ridge-ploughed. Mr. B. says his neighbour almost lost his crop. But this must have been because he did not plough right, not because he did not ridge up his ground. *b*)

In ploughing most level ground for tillage, be sure to plough in a direction to drain, and in small lands.

The ordinary mode of tilling low, level land with corn is to enter on one side, and plough a large, flat land; having no reference to draining it, and paying little or no attention to the depth of ploughing. Consequently in this moist and soft ground it is ploughed one foot deep. If the manure is spread and ploughed in, without any addition, say ten fifty-bushel cart loads, the probable crop, with good attendance, is ten bushels of corn to the acre. If four loads of old yard-manure is put in the hills in addition, it is twenty bushels. It is seen that I allow but little in this mode of tillage. But my experience teaches me that it is full enough. Now this seems to be discouraging in tilling low ground with corn. But I tell you not to be discouraged; I am sure those soils are the richest on our farms, and they can be improved so as to produce the most corn as well as most other vegetables. Cart on the ten loads of good manure, and spread it even. Plough with a sharp plough with a foot, as we call it, for a gauge on the beam; it is far preferable to a roller, as it levels off small protuberances, instead of jumbling over them like a roller. Plough this ground, in small lands, in a direction to drain six inches deep. Tend it well, and the probable crop is forty bushels. Add four loads of manure, and put it in the hill, and the crop will be fifty bushels Now there is encouragement. But plough the ground with the same apparatus in the same direction, and the same manure, three inches deep, with the same good attendance, and the probable crop is eighty bushels per acre. In this last mode of tillage it is improper to put manure in hills. And if the four loads or more be added and spread carefully on sward, and ploughed smoothly in and carefully harrowed lengthwise with the furrow, so that you turn back no turf and the whole attendance be good, you may reasonably expect one hundred bushels, common evils excepted. I will observe that these remarks are founded on experience, and

not on theory. This last mode I much prefer to all that I have heard of or tried, and I have tried all which promised the least success. (c)

I will briefly explain the causes of these different products. In the first and ordinary mode, the sward that is full and warm with vegetable manure is turned below the reach of the corn roots, especially as they run shoal on this wet ground, and if manure is in the hill it will spring a little from the effects of it. But there is nothing else to feed the corn, but the wet, cold, naked clods, destitute of any kind of manure, and the corn is subject to renewed colds from every rain or dew; hence it cannot thrive. On the other hand, if it be ploughed three inches deep, the sward full of vegetable manure, with the barn dung and the rubbish, are ploughed in, the soil will lay up light, and the sun and air having their effect to the depth where the roots will be found most abundantly, and exactly in their elements, not suffering from drought nor wet, will thrive beyond conception. This is the ground and the mode of tillage that I shall principally pursue the coming season.

I choose to plant my rows across the lands and furrow, and as the sward rots, a light harrow has a good effect. I plant in a drill made by a large tooth in a light horse-harrow, or a machine for that purpose. There can be no ploughing among this corn, nor any hill made.

I planted high ground last season, and to guard against drought, and to have my ground well prepared to sow winter rye, I made my drills seven feet and a half apart, and dropped my corn, single kernels, four inches apart in the drills. A part of it was three kernels together, one foot in the drills. One object in tilling the ground in this manner was to have it well prepared to harrow into it winter rye, at any time when I might think proper, without any other expense. I worked my ground so constantly with harrow, plough, &c., drawn by a horse, as to keep it perfectly clear and mellow, snug up to my corn, using the hoe only to clear the weeds round the roots of the corn. By this tilth my ground was kept in the most perfect and beautiful order that can be conceived, and without a single cent's cost for the next crop. And I found no obstruction in getting in my rye while the corn was on the ground.

I will observe that I have not owned this ground long, before I tell you that it is much worn down by too frequent tillage. Consequently I could not expect a great crop, especially as I put only two loads of barn-yard manure per acre. This was strewed in the drills, after dropping the corn. My crop exceeded my expectation. I expected only two hundred bushels, but gathered three hundred from about twelve acres. This mode of husbandry is somewhat new to me. I shall leave it for the reader to judge for himself the advantage. On my low ground I shall

drill for my rows four or five feet distance, as the land will be much higher manured and not liable to drought. I am sensible that I get more corn from drill than hill planting. But I will give one hint to those who for any reason plant in hills. A general, if not universal opinion prevails that the seed corn should be spread in the hills, and much pains are taken consequently to spread it, and this they say they know to be the best method for a crop. They tell me the corn comes up when alone much stronger and stubbeder, shoots out, and far outgrows that which comes up together. This is true as far as respects the better appearance of the corn, when young. But this is not all which should be considered in a crop. The object should be to grow the most corn on the same ground. To convince farmers to change their practice, and to plant their seed as nigh together as possible, they will be benefitted from less labour and a much better crop, I fitted a piece of ground as equally as I could and well for a crop of corn, with old dung in the hills. I fixed a machine with five tree-nails, in an even circumference, eight inches diameter, and stamped a number of rows, after being levelled, and planted my seed carefully in them. I took a staff and made one hole in a place, in rows fitted in the same manner by their side. The appearance of the corn planted by single kernels was far before the other while young. I am positive that every plant had from two to four shoots each; and I am as positive that there was not one on one stalk of the other; and they also appeared much slimmer. It is easy to conceive that the single planted was vastly harder to tend. This ground was warm and fair for a crop. As the season advanced, and became hot and dry, the single planted began to stop growing, while others appeared to suffer for nothing, and throve beyond account compared with the single kernel planted, as that was very bushy, and so affected by drought that it produced but small ears, whereas the other had full, large ears. I weighed the corn in baskets when harvested before husked, and found twice the weight from that planted together, and believe there was more difference when shelled. Since that experiment, I have taken care to plant my corn, that I plant in hills, as close together as possible. The reasons I give for this great difference in produce from the different modes of planting are, that corn requires a free circulation of air, and a good exposure of the earth to the sun, and a good unobstructed space for the root; and lastly, not to be overstocked with any kind of vegetable, of which corn shoots are the worst. (*d*)

I feel unwilling to leave this subject until I have given a full exposure of erroneous opinions and practices that prevail. A neighbour set out with a full determination to get a premium. His farm was under the highest cultivation; he was in the habit of procuring great quantities of manure and using it freely. In

this way he prepared three acres of his best ground, and had given out word, with the greatest confidence, that he should get the premium on corn. He considered that his ground was as good as any in the country, and he was confident no one would manure as high as he would, and of course his ground ought to be seeded high. He also gave his corn the best of attendance. It throve wonderfully, it was a show, and he appeared to take great pride and satisfaction in it. It grew so high and slender withal, that it could not well support itself. The result was that at harvesting he received only five bushels per acre. A. R.

Portsmouth, N H. April 11, 1831.

Notes by the Editor of the 'New-England Farmer.'

(*a*) Dr. Deane, in his 'New-England Farmer,' expressed opinions similar to those of our correspondent with regard to the inexpediency, as a general rule, of planting corn on sward land: and says "it is apt to be backward in its growth and not to ripen well. But if we do it on such land, the holes should be made quite through the furrows, and dung put into the holes. If this caution be not observed, the crops will be uneven, as the roots in some places where the furrows are thickest will have but little benefit by the rotting of the sward. But if the holes be made through, the roots will be fed with both fixed and putrid air, supplied by the fermentation of the grass-roots of the turf. In this way I have known great crops raised on green-sward ground, where the soil was a sandy loam, but mostly sand."—This writer, and many others, recommend a crop of potatoes as preparatory to that of corn. E. Phinney, Esq., has been very successful in raising corn on green sward, and his methods of culture are described pp. 226, 266, of the current volume of the 'N. E. Farmer.'

(*b*) With regard to ridge-ploughing, the following appears to us to be correct. "When there is reason to apprehend that the ground will prove too moist for this crop, it will be advisable to plough it into narrow ridges, and seed each ridge with one or two rows as shall be most convenient. But sandy and clay soils should merely be turned over, in a flat furrow, and not afterwards ploughed so deep as to break the furrow. For clay, if mellowed too much will become mortar in wet weather and bake in dry, and the sand will become too loose to support vegetation."—*Memoirs of N. Y. Board of Agriculture.* vol. ii. p. 20.

(*c*) Although such shallow tillage is contrary to the theory and practice of most cultivators, it is not without precedent — Earl Stimson, a celebrated agriculturist of Saratoga County, N. Y. raised very great crops by ploughing but three inches in depth. In an address delivered before the 'Saratoga Agricul-

tural Society' (republished in the 'N. E. Farmer,' vol. v. pp. 224, 252) he gives the details of his mode of culture for Indian corn, and other crops, and remarks, "shallow ploughing and the application of manure to the surface is contrary to the common theory, as it is contended by some writers that the manure loses its strength by evaporation, when so much exposed to the sun. There may be some loss by the exposure, but not so much as there is by ploughing it in deep. I should always wish, however, that the manure; after being spread from the wagon, might be immediately mixed with about one inch of the surface either with the plough or harrow after rolling, as the decomposition is much quicker when it comes in contact with the soil, and in this situation it becomes a better conductor of the vegetable elements to the plant. Keeping the vegetable mould as near the surface as possible, I have found not only a great preservation to the plant against frost, heavy rains and severe droughts, but the sod below absorbs the wash of the manure, and thus prepares it well, when turned back, for the next crop. As our new lands are much surer for and more productive of crops, where the vegetable mould is all on the surface, the nearer I approach the same principle in cultivating the soil, the better I succeed in raising crops. I have received more benefit from three loads of manure applied as above, than from five when ploughed in deep."

(*d*) In an able essay on the culture of Indian corn, by S. W. Pomeroy, (republished in the 'N. E. Farmer') that gentleman observes, "I think four stalks together afford support to each other against winds, and are not so apt to send up suckers as when single, and there may be some advantage by concentrating the manure, in forwarding the young plants during the cold season which we frequently have in June." Judge Buel, likewise, says "Plant your corn in hills. The distance will depend on the kind of seed and strength of the ground," &c.—See p. 326, our current volume.

Art. XVIII.—*On the Cultivation of Quinoa or Peruvian Rice.*

[FROM THE AMERICAN FARMER.]

The only direction that we have obtained from Peru for cultivating the quinoa, is, that it is to be sown and managed like

wheat. From our brief experience we find this entirely erroneous, and by following it last summer we lost at least nineteen-twentieths of our small supply of seed. We sowed the seed in drills one foot apart, the seed in the drills about as close as wheat, on common soil. The result was, the plants stood so close that few of them bore seed; while a few scattering plants that grew singly, yielded abundantly; and the richer the ground the greater was the yield—so much so was this the case, that one plant that grew in a spent hot-bed (a pile of rotten stable-manure with a few inches of soil on the top) yielded about two quarts of seed. We conclude from this that the quinoa should be planted one foot apart each way; the ground should be highly manured with stable manure, and it should be hoed like corn to keep the weeds down in the forepart of the season. It should be planted as early as the season will admit. The frost in the fall does not affect it, much of ours was standing during the severe frosts of this month [Nov.]; the plant on the spent hot-bed particularly, was exposed to the very severe snow storm of Monday night last, the 21st inst., and the leaves frozen as hard as ice; but no injury was done to it. In cleaning out the seed, after the plants are ripe, we cut them up, tie them in convenient bundles and dry them perfectly. The seed is then easily rubbed out by the hand, and cleaned by winnowing. Some simple machine will soon be invented to clean it. The Peruvians rub the tops between coarse woollens cloths. If the ground be highly manured we believe that it will produce one hundred and fifty bushels to the acre—at least this is the proportion produced by some of ours. It has this great advantage over every other grain—you cannot make the ground too rich for it, and it will yield in proportion to the quantity of manure applied, or to the richness of the soil. It will grow on any soil, where the common lambs-quarter (*chenopodium alba, its full brother*) will grow. From a rough calculation we judge that half a pound of seed will be sufficient for an acre of ground. We must not forget to caution persons who make trial of this new grain, against *destroying it by mistake;* for it resembles so closely the common weed called lambs-quarter in some places, *pig-weed* in New-York and some other places (*chenopodium alba*) that before the seed begin to form they can scarcely be distinguished from each other.

Quinoa is used for all the purposes of common rice. We have tried it in all the different forms—in a baked pudding we think it far superior to rice. It does not resemble rice either in flavour or appearance; and can only have received the name of Peruvian rice from the fact of its being used in the same way. Its flavour resembles that of oatmeal more than any thing else. The grain is circular, flat, and about the size of a small radish-seed. There are two kinds, the white and the red. The former

when cooked is quite white, the latter retains its reddish colour. They are easily separated, as the whole of the red plant is covered with a reddish powder, which is a most perfect *rouge* when applied to the skin. The colouring matter is not dissipated by light, but remains permanent. Perhaps a valuable dye may be extracted from it. The leaves are used as spinage, being little (if any) inferior to common spinage. Persons wishing to try the quinoa can obtain seed at the rate of four dollars a pound, by applying to the editor of the 'American Farmer.'

Art. XIX.—*On Making and Preserving Butter; by* J. Buel *of Albany.*

[FROM THE NEW-ENGLAND FARMER.]

Butter is an important article in household economy; and as upon its quality depends very much the profits of the farmer as well as the comfort of the consumer, I send you, Mr. Editor, a few hints on the process of making and preserving it.

The art of *making* butter consists in separating, with skill and neatness, the oil from the serum and curd with which it is combined in the milk, and of seasoning it to suit the palate. The art of *preserving* good butter lies in so keeping it as to have it retain its rich, sweet flavour. The best method I know of effecting these objects, is embraced in the following rules:

1. In the first place, see that your cows are supplied with a plenty of nutritious food. This is the raw material from which butter is made; and unless this is good and abundant, the manufactured article will be scanty and poor.

2. Let the milk be set in shallow, broad pans, of wooden, tin, or stone earthenware, to facilitate the separation of the cream, in a cool, clean apartment.* Red-glazed earthen is bad; and

* A good practice prevails in Pennsylvania of building stone milk-houses over or near springs, where a proper temperature is maintained during the heats of summer. This practice is worthy of imitation where springs are convenient; and where they are not, a substitute which I saw at Col. M'Allister's, at the Blue Ridge above Harrisburg, may in many cases be adopted. The colonel had built a neat underground room, in the side of the hill, near his well, handsomely plastered upon brick or stone walls, covered I think with earth, at all events with a luxuriant Bignonia radicans, which when I saw it was in full bloom. Around the sides were sinks or vats for setting in his milk pans, so constructed that the water passed off ere it reached the rims of the pans, with plugs in the bottom to let the whole off when desired. A spout led from this pump into these sinks, through which the water was conducted. By renewing this water occasionally, according to the weather, an equilibrium was easily maintained in the milk-house at the desired temperature.

lead is often poisonous. I think the best temperature is about fifty degrees or Fahrenheit.

Let the cream or milk* be churned before it has become rancid or bitter; as at this stage it has lost its finest qualities for butter.

4. The operation of churning should be moderately and regularly performed.† If too slow, and at intervals only, the separation is tedious and uncertain. If violent, the cream is too much heated, and yields a white, insipid butter.

5. Put no water with your cream nor with your milk. The flavour, I may say aroma, which gives to butter its high value, is extremely volatile, is disengaged by heat and materially dissipated by water. Work the butter thoroughly with the butter-ladle, in a wooden bowl, which may be set in water to cool the mass; and while this operation is being completed, mix pure, fine salt‡ enough with the butter to season it for the table, and set it by in the bowl in a cool cellar till next day—at which time the salt will be completely dissolved, when it is to be thoroughly incorporated by again working the butter with the wooden ladle until every particle of liquid is expelled.

The *making* process is now completed. To *preserve* the rich flavour which this process secures, pack the butter nicely down in a perfectly tight, sweet vessel, and none is better than a stone earthen-jar, *without a particle of additional salt;* smooth the surface, and cover the top two inches with a strong, cold brine, which has been made by boiling and skimming the materials. If a pellicle or scum is seen to rise upon the pickle, turn off the liquid and replace it by fresh pickle.*

I am accustomed to eat butter, of May, June and October, made and preserved in this way, when it is from six to twelve months old, without perceiving any material difference between it and that which is fresh made.

* In a great part of New-York, the milk is churned; in New-England generally only the cream. The Dutch method I think produces the most butter.

† The dog-churn is in general use in many counties, particularly on the borders of the Hudson. In Orange, we hear this in operation in a summer's morning at every farm house. It is a great saving of labour to the family which has a barrel of milk to churn daily. In one place I saw a sheep treading the diagonal platform, and another tied at hand to relieve him.

‡ Liverpool blown salt will not keep butter sweet, and is besides deleterious to health when used for culinary purposes. See the analysis of this salt in an early number of the 'New York Medical Journal,' by Drs. Miller and Mitchell. They ascribe to its use much of the sickness which afflicts parts of our country. Pure alum salt should alone be used, after it is ground or well pounded. The salt made at Onondaga, by solar evaporation, and sold in casks, for table use, is perhaps as pure muriate of soda as comes into market.

Art. XVIII.—*On the Management of Cows, Calves, Sheep and Pigs.*

[FROM THE LIBRARY OF USEFUL KNOWLEDGE.]

Management of Cows.—The cows are generally turned out to grass in the end of April or beginning of May, upon those grounds which Mr. Hayward has found, from experience, to produce the most and the richest milk. These grounds are nearest to the home-stead, and have always been pastured.—The driving of the cows before milking, and the carrying of the milk to any considerable distance, are found to injure the quality of the cheese; and to avoid this consequence, the pasture-grounds should always be, as on this [Gloucestershire vale] farm, near the home-stead.

The cows, on this farm, are divided into three lots, the young and weak ones being in one lot. Each of these three lots has two fields of pasture, and they are generally kept a week at a time in each field; so that they have fresh pasture every week—an advantage much greater than most farmers are aware of. Great care is taken never to overstock the pasture of the cows. They ought, at all times, to have a full bite of close, short, fine grass. Long overgrown grass gives a rank flavour to the cheese, and should always be avoided.

In dry seasons, when the pasture has got too short, some of the fields that were intended for mowing are given up to the cows for pasture. When the hay is all cleared off the mowing grounds, and the after-grass begins to grow, (it generally takes several weeks to make much appearance) the cows are shifted into these grounds. Land which is long pastured by any animal gets foul or unsound for it, and the after-grass always makes the cows spring their milk. They are, therefore, generally moved from the pasture grounds into the after-grass before there is much of it for them.

It is very essential for the cows to have a shade and water in every field. The shade of large trees, however, is the only shelter from the sun and the storm, which they have on this farm, and indeed in the whole vale.

Cows should, in winter, be kept as warm and as comfortable as possible. Every dairy should be provided with shades and warm courts for the cows; but in the vale there is scarcely an instance of accommodation of this kind for one-fourth of the cows, and there is not more on this farm. Hence most of them are foddered in the dryest and warmest grounds; and before calving, they get hay served out to them morning and evening; but after calving, they are fed three or four times a day, and with the best of the hay.

Calves.—The calves are allowed to remain with their mothers for about a week after they are dropped, because the milk, during this time, would not do for making cheese. The best of the heifer calves are selected for breeding. Such of the remainder as are dropped before March are fattened; those that are dropped after that time are sold young, as, then, veal generally becomes cheap, and milk is of more value for making cheese than for feeding calves.

After the first week, the calves that are to be weaned are parted from their mothers, and put on the calves'-stage, a sort of crib erected in the calves' houses, which being raised one foot from the ground, and being open in the bottom, keeps them dry without the help of litter. Here they are allowed two quarts of sweet milk in the morning, and the same quantity in the evening, for the first six weeks. At the end of this period they begin to eat hay, some of the best of which is given to them; and, instead of milk, they get a mixture of sweet milk and water. They are turned out into some of the earliest and best pasture, as soon as there is any for them.

The whole breeding stock are distributed into lots, according to their ages, and kept apart summer and winter. They are kept either on the upper field of this farm, or taken to another farm on the hills, where they are treated in the same way as the breeding stock are on Beverston farm.

Sheep.—There are upwards of three hundred sheep kept on this farm. They pasture the upper field in summer; and in autumn and winter they eat up the rough grass left by the cows. The management of the sheep is the same as that practised on Beverston farm, to the account of which we refer the reader.

Pigs.—Upon this and every dairy farm a number of pigs are necessary to consume the whey—one pig to two cows in summer, but not so many in winter. Their food, in summer, is grass, clover, vetches, and whey; in winter, raw potatoes, with tailing corn, whey, and skimmed milk. When they are being fattened, bean or barley-meal is mixed with boiled or steamed potatoes, in the proportion of a bushel of meal to two hundred weight and a half of potatoes. The breed of pigs kept on this farm is the Berkshire, with a small mixture of the Hereford. Some of them are sold in a store state; most of them are fattened. Five or six breeding sows are always kept, which are regularly fattened off, when one year and a half old, and fed to about three hundred weight.

Art. XXI.—*On Fattening Swine.*

[FROM THE NEW-ENGLAND FARMER.]

The corn given to your swine should be soaked, boiled, or ground into meal. It is an advantage to let the food for swine ferment a little, but not become very sour, before they are fed with it. Dough made of meal and water mixed with boiled potatoes, is excellent for swine. Their lodgings should be dry, warm, and kept clean. To prevent measles and other disorders, and to increase their appetites, a little brimstone now and then, given in their dough, is useful. Change of food is adviseable in every stage of their existence. They should receive their meals with regularity. They should always have as much food as they will eat up clean; but never more than that quantity. If the issues in their fore-legs should be stopped, they should be rubbed open with a cob. "Rubbing and currying their hides very frequently is of advantage to keep up perspiration. It is grateful to the animals, as well as conducive to their health. Every stye should have a rubbing-post."

"Having occasion, (says Marshall, a celebrated English writer) to shift two hogs out of a stye without one, into another with a post, accidentally put up to support the roof, he had a full opportunity of observing its use. The animals, when they went in, were dirty, with broken, ragged coats, and with dull, heavy countenances. In a few days they cleared away their coats, cleaned their skins, and became sleeky haired; the enjoyments of the post were discernible even in their looks, in their liveliness, and apparent contentment. It is not probable that any animal should thrive while afflicted with pain or uneasiness. Graziers suffer single trees to grow, or put up dead posts in the ground, for their cattle to rub themselves against; yet it is probable that a rubbing-post has never been placed intentionally in a stye; though perhaps for a two-fold reason rubbing is most requisite for swine."

Loudon has the following observations:

Hog-styes for the breeding or fattening of swine, are mostly built in a simple manner, requiring only warm, dry places for the swine to lie in, with small areas before, and troughs to hold their food. They are generally constructed with shed-roofs, and seldom above six or seven feet wide, with height in proportion. In order that they may be convenient, they should be at no great distance from the house; and the less they are connected with the other farm-buildings the better. In some cases, it might be of utility to have them connected with the scullery, in such a way, as that all sorts of refuse articles might be readily conveyed to them by pipes or other contrivances. When at a distance, they should be so placed as that the servants need not

enter the farm-yard in feeding them. It is a circumstance of vast advantage in the economy of labour, as well as food, to have them conveniently situated and built. Though swine are generally, perhaps from a too partial view of their habits, considered as filthy animals, there are no animals that delight more in a clean and comfortable place to lie down in, and none that cleanliness has a better effect upon with respect to their thriving and feeding. In order to keep them dry, a sufficient slope must be given, not only to the inside places where they are to lie, but to the outside areas, with proper drains to carry off all moisture. The outsides should also be a little elevated, and have steps up from the areas of at least five or six inches in height. Hog-styes should likewise have several divisions, to keep the different sorts of swine separate; nor should a great many ever be allowed to go together; for it is found that they feed better in small numbers, and of equal size, than when many of equal sizes are put together. Proper divisions must, therefore, be made; some for swine when with the boar; others for brood swine, and for them to brood in; for weaning the pigs, for fattening, &c. When convenient, the areas should be pretty large. And where it can be had, it is of great use to have water conveyed to them, as it serves many useful purposes."

PART III.

MISCELLANEOUS INTELLIGENCE.

Canker in Fruit-trees.—A paper on this subject has been read before the 'Caledonian Horticultural Society,' by Mr. Peter Campbell, gardener at Coalston, in which this experienced gardener gives it as his opinion, that the cause of canker in fruit trees is a stintedness of growth that takes place from a bad subsoil, and the ground not being properly prepared before the fruit trees are planted. An experiment he has tried, proves (he says) to be an effectual cure for that disease, so far as he has hitherto experienced. There were upwards of seventy espalier fruit-trees taken with canker, that had entirely given up bearing; twelve of them had only been about twelve years planted. The soil these trees grew in was of a sandy nature, and was formerly a bog full of springs, with veins of black sand about eighteen inches below the surface. By examining the roots that went down into these veins of black sand, they were found to differ from the other roots, and some parts were quite swelled and overgrown, compared with other parts of the same root, so that it had more the appearance of a tuberous than a fibrous root, and the wood itself was very seriously injured in the interior. He instantly proceeded to clear away the soil from the roots, with care so as not to injure them, first to the distance of three feet from the trunk of the trees all round, and afterwards as much under the trunk as could be got out; he cut off the tap roots that went right down, and also all the roots that were diseased, and proceeded to clear away the soil another foot round the tree; a layer of bricks, &c., being laid on the bottom, he then filled up the hole with good mould mixed with rotten cow-dung, beating in every course below the trunk of the tree with a beater made for that purpose. He then proceeded to prune off the tops of the trees, not leaving a branch or bit of wood that had canker in it on any of the trees. By this treatment (he says) the trees are become quite healthy, and free from any moss or lichen, and without the least appearance of canker.—*N. E. Farmer.*

A Fruitful Vine.—A gentleman informs us that there is growing in the vicinity of Boston a wild vine twenty-one inches in circumference, forty-seven paces or one hundred and forty-one feet in length. That its common, annual produce has been about seven bushels of a fine white grape, but this year it has produced but about ninety-two pounds, in consequence of having been cut away in order to obtain scions for grafting, &c.—*Idem.*

Preservation of trees from Hares.—According to M. Bus, young fruit trees may be preserved from the bites of hares, by rubbing them with fat, and especially hog's lard. Apples and pear trees thus protected, gave no signs of the attacks of these animals, though their foot marks were abundant on the snow beneath them.—(Bull Univ.)—*Jour. of Royal Inst. vol. i. p.* 42.

Tenacity of Vegetable Life.—Mr. Houlton produced a bulbous root to the 'Medico-Botanical Society,' which was discovered in the hand of an Egyptian mummy, in which it had probably remained for two thousand years It germinated on exposure to the atmosphere; when placed in the earth it grew with great rapidity.—*Idem.*

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Cowpeas.—A friend in Louisiana, in a letter to the editor of the 'American Farmer,' makes the following remarks relative to the cowpea, which we consider valuable:—

"I have lately noticed in the 'Farmer,' some remarks on the cowpea, and as I have some experience in raising them, I will state the result of my observations. The first time I ever planted them, except with corn, was on a piece of ground much worn and exhausted, off which I had just taken a crop of oats; about the first of June, then broke up the ground, ran furrows across the ploughing four feet apart, in which the peas were dropped and covered with a light plough, followed by one horse-harrow, to remove the clods and pulverize the earth. When they were six or eight inches high, I had them ploughed and hoed, which was all the work they ever had. I planted six acres in this way, and in the fall when the pod and leaf began to turn yellow, I had two acres cut and cured for hay, which, I think, produced two and a half to three tons per acre. I, at the same time, sowed half an acre (by way of experiment) broadcast, and harrowed them in, and the difference of product was astonishing; I think four to one in favour of the part drilled and afterwards ploughed and hoed. I discovered that both cattle and horses preferred the pea to the best timothy hay or corn blades, and have no doubt it affords an equal or greater degree of nourishment than either. The cowpea will succeed well in all the Middle or Southern States, and on every description of soil. I have tried it, and I have for many years been greatly surprised more attention has not been paid to its cultivation, as I think it a most valuable crop for feeding stock or restoring worn out lands. It may be raised advantageously with corn, or drilled in the way I have described. I omitted to describe the manner I had the peas cut and cured. The hands took a common knife, followed the rows and cut the vines at the top of the earth, loosened them a little from the ground and turned them over, they were turned afterwards, pretty much as other hay is managed in curing. It requires much longer to cure than hay made of grass, and when put up must be secured under a shelter."—*Amer. Farmer.*

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Curing Pork.—Mr. Editor: In the 'New-York Farmer' I noticed a recipe for making "Knickerbocker pickle," for beef or pork. I will give mine, which I have used for twenty-six years with uniform success, and I will tell how and where I got it. In August, 1805, I lodged from Saturday to Monday with an innkeeper in Cherry Valley, N. Y. (who was also a farmer). On the table, for Sunday's dinner, there was a fine piece of pickled pork, boiled the day before. I tasted it, and thought it the most delicious I ever ate. I requested "mine host" to give me his receipt for curing pork. He replied he would do so with pleasure, and proceeded as follows:—

"As soon as my hogs are dressed and cool enough to be cut, I pack the side pieces in a barrel or cask, with plenty of salt on all sides of each piece, and when my cask is full I immediately roll it to my pump and I pump in water until I can see the water cease to sink in the vessel, or to moisten the salt on the top of the cask. I then lay a flat stone, as large as the vessel will receive, on the contents of the vessel, so as to keep the pork always under the salt or pickle. I put it in my cellar, covered so as to exclude the flies, and there it remains until a piece is wanted. Care must be taken to keep the meat under the pickle, otherwise it will rust."

Here is the whole secret of making good pickled pork for family use. I have used this method for the time above-mentioned, and I want no better,

easier, or economical plan. It has often happened that when I wanted to put down new pork there remained some of the old in the bottom of the cask. In that case, I poured off the pickle, took out the undissolved salt, packed the fresh pork on the top of the old, using the salt which had been in the cask, with the addition of fresh, if necessary, and then poured on the old pickle or water. In this way I have had pork three or four years in the bottom of my pork-barrel, and when used it was as free from rancidity as it was three weeks after it was put down. Indeed, I seldom empty my pork-barrel, except when it wants hooping. I believe that boiling pickle is useless if not injurious. Pork ought not, if it can be prevented, be frozen before it is put down. C.

Princeton, N. J. [*N. Y. Farmer.*

Reaping Grain.—The French claim the merit of a new discovery of great importance to agriculture in the advantages which, according to them, result from the practice of reaping grain before it is perfectly ripe. This theory, which has just been promulgated by M. Cadette de Vaux, originated with M. de Salles of the Agricultural Society of Beziera. The following are the particulars: Grain reaped eight days before the usual time, is, in the first place, secured from the dangers which threatened it at that time—this is only accidental; but a positive advantage is, that the grain is fuller, larger, finer, and that it is never attacked by the weevil.

The truth of these statements has been proved by the most conclusive, comparative experiments upon a piece of grain, one half of which was reaped before the usual time, and the other half at the degree of maturity fixed by the ordinary practice. The first portion gave a hectolitre of grain more for half a hectar of land. Afterwards, an equal quantity of flour from the wheat of each portion was made into bread; that of the grain reaped green gave seven pounds of bread more than the other six hecalitres. Lastly, the weevil attacked the grain that was cut ripe, the other was exempt from it. The proper time for reaping is that when the grain, on being pressed between the fingers, has a doughy appearance, like the crumb of bread just hot from the oven, when pressed in the same manner.—*N. E. Farmer.*

Agriculture in England.—An American gentleman, (a correspondent of the 'New York Observer') and now in England, thus speaks, in comparing English agriculture with that of this country.

"From Manchester to Birmingham, with the exception of the coal regions of Wolverhampton, and another few miles of poor land, the whole country is a perfect garden. An American farmer knows nothing of English husbandry. The difference is too wide for him to be able to appreciate it. Select the most cultivated grounds of the rich on Manhattan island, or behind Brooklyn, or in the immediate vicinity of Philadelphia, or of Boston—and they are only ordinary specimens of English farming. A poor English cottager displays a taste about his humble dwelling, and gets a product from his little patch, which might shame the wealthy farmers of the United States. I wish not to speak disrespectfully of my country or countrymen—but I should like to provoke them, by whatever means, to more rapid improvements, both in agriculture and horticulture."—*Amer. Farmer.*

Precaution in Planting Potatoes.—It would appear from experiments made in Holland, that when potatoes are planted, the germs of which are developed, as happens occasionally in late operations, or after mild winters, that the produce differs in quantity by more than a third to what it would be, if potatoes which had not advanced had been used, and further, that besides this diminished product, the quality is inferior.—*Jour. of Royal Inst.*

Common Salt a Remedy for Animal Poison.—The Rev. J G. Fischer, formerly a missionary in South America, says he "actually and effectually cured all kinds of very painful and dangerous serpents' bites, after they had been afflicted many hours," by the application of common salt moistened with water and bound upon the wound, "without any bad effect ever occurring afterwards."

"I, for my part, (says he) never had an opportunity to meet with a mad dog, or any person who was bitten with a mad dog I cannot, therefore, speak from experience as to hydrophobia, but that I have cured serpents' bites always, without fail, I can declare in truth." He then cites a case from a newspaper, in which a person was bitten by a dog, which in a few hours died raving mad. Salt was immediately rubbed for some time into the wound, and the person never experienced any inconvenience from the bite.

Mr. Fischer was induced to try the above remedy, from a statement made by the late Bishop Loskiell in his history of the missions of the Moravian Church in North-America, purporting that certain tribes of Indians had not the least fear of the bite of serpents, relying upon the application of salt as so certain a remedy, that some of them would suffer the bite for the sake of a glass of rum.—*Idem.*

Profitable Onion-bed.—Mr. Aldrich of Smithfield, R. I. has obtained from an onion-bed forty feet by twenty, a crop of onions, which after being washed and tied up in bunches, sold for $7,83, not including those used in his own family. The produce of an acre, at this rate, would amount to upwards of $400. The onions were sown in drills fourteen inches apart; the ground was often stirred shallow between the rows with an iron rake, and kept free from weeds. Mr. A. has a large kitchen garden in a thriving manufacturing village, and is thus enabled to bring his onions to a good market.—*Amer. Farmer.*

Silk Filature.—We have been gratified with seeing the progress of the silk culture in this neighbourhood Mr. Cobb has the silk reeled with great evenness, in his own family; and several families in the neighbourhood have been engaged in rearing silk worms for him this season, and as he reels all that comes, to advantage, it is probable that this useful branch of industry will be rapidly extended We understand that when Mr. C. buys the cocoons he pays from twenty five to fifty cents per pound—and that the silk as it comes from the reel fetches from four to six shillings per pound. Mr. C. has in press a manual on the culture of silk, which is to be distributed to each of the towns in the commonwealth, at the public expense. This manual is calculated to give plain practical directions on the subject, so that a person who never saw a silkworm may take it up and with proper attention may proceed in the business with advantage. He has lately introduced to his garden from New-York the morus multicaulis—a kind of mulberry tree bearing leaves one foot in length, and which is said to be superior to all others for the nursing of the silkworm, and which he recommends to general cultivation in the State of Massachusetts. We saw at Mr. C.'s house five varieties of the cocoon. It is said that the large, white cocoon of the French insect is the most rich, and ought to be preferred by the cultivator, on account of its being best for white silk; of the small, Chinese worm, from four to five crops can be raised in a season. Mr. C. has himself these worms now which three weeks since were in the chrysalis of the cocoon—the moth having eaten out, deposited her eggs, and the eggs having hatched, the worms are now eating the leaves, and the whole has been done in the short space of three weeks. Mr C. obtained this variety of the insect from Baltimore.—*Dedham Politician.*